



SEQUENCE LISTING

<110> Yaffe, Michael B.
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Cantley, Lewis C.
Smerdon, Stephen J.
Manke, Isaac

<120> Computer Comprising Atomic Coordinates of a PLK-1 Polo-Box Domain
and Uses Thereof

<130> 01997/545003

<140> US 10/713,978
<141> 2003-11-14

<150> US 60/487,899
<151> 2003-07-17

<150> US 60/485,641
<151> 2003-07-08

<150> US 60/426,132
<151> 2002-11-14

<160> 129

<170> PatentIn version 3.3

<210> 1
<211> 603
<212> PRT
<213> Homo sapien

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Met Ser Ala Ala Val Thr Ala Gly Lys Leu Ala Arg Ala Pro Ala Asp
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Pro Gly Lys Ala Gly Val Pro Gly Val Ala Ala Pro Gly Ala Pro Ala
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Ala Ala Pro Pro Ala Lys Glu Ile Pro Glu Val Leu Val Asp Pro Arg
35 40 45

Ser Arg Arg Arg Tyr Val Arg Gly Arg Phe Leu Gly Lys Gly Gly Phe
50 55 60

Ala Lys Cys Phe Glu Ile Ser Asp Ala Asp Thr Lys Glu Val Phe Ala
65 70 75 80

Gly Lys Ile Val Pro Lys Ser Leu Leu Leu Lys Pro His Gln Arg Glu
 85 90 95

Lys Met Ser Met Glu Ile Ser Ile His Arg Ser Leu Ala His Gln His
 100 105 110

Val Val Gly Phe His Gly Phe Phe Glu Asp Asn Asp Phe Val Phe Val
 115 120 125

Val Leu Glu Leu Cys Arg Arg Arg Ser Leu Leu Glu Leu His Lys Arg
 130 135 140

Arg Lys Ala Leu Thr Glu Pro Glu Ala Arg Tyr Tyr Leu Arg Gln Ile
 145 150 155 160

Val Leu Gly Cys Gln Tyr Leu His Arg Asn Arg Val Ile His Arg Asp
 165 170 175

Leu Lys Leu Gly Asn Leu Phe Leu Asn Glu Asp Leu Glu Val Lys Ile
 180 185 190

Gly Asp Phe Gly Leu Ala Thr Lys Val Glu Tyr Asp Gly Glu Arg Lys
 195 200 205

Lys Thr Leu Cys Gly Thr Pro Asn Tyr Ile Ala Pro Glu Val Leu Ser
 210 215 220

Lys Lys Gly His Ser Phe Glu Val Asp Val Trp Ser Ile Gly Cys Ile
 225 230 235 240

Met Tyr Thr Leu Leu Val Gly Lys Pro Pro Phe Glu Thr Ser Cys Leu
 245 250 255

Lys Glu Thr Tyr Leu Arg Ile Lys Lys Asn Glu Tyr Ser Ile Pro Lys
 260 265 270

His Ile Asn Pro Val Ala Ala Ser Leu Ile Gln Lys Met Leu Gln Thr
 275 280 285

Asp Pro Thr Ala Arg Pro Thr Ile Asn Glu Leu Leu Asn Asp Glu Phe
 290 295 300

Phe Thr Ser Gly Tyr Ile Pro Ala Arg Leu Pro Ile Thr Cys Leu Thr

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| Ile Pro Pro Arg Phe Ser Ile Ala Pro Ser Ser Leu Asp Pro Ser Asn | | | | | | |
| | 325 | | 330 | | 335 | |
| Arg Lys Pro Leu Thr Val Leu Asn Lys Gly Leu Glu Asn Pro Leu Pro | | | | | | |
| | 340 | | 345 | | 350 | |
| Glu Arg Pro Arg Glu Lys Glu Glu Pro Val Val Arg Glu Thr Gly Glu | | | | | | |
| | 355 | | 360 | | 365 | |
| Val Val Asp Cys His Leu Ser Asp Met Leu Gln Gln Leu His Ser Val | | | | | | |
| | 370 | | 375 | | 380 | |
| Asn Ala Ser Lys Pro Ser Glu Arg Gly Leu Val Arg Gln Glu Glu Ala | | | | | | |
| | 385 | | 390 | | 395 | 400 |
| Glu Asp Pro Ala Cys Ile Pro Ile Phe Trp Val Ser Lys Trp Val Asp | | | | | | |
| | 405 | | 410 | | 415 | |
| Tyr Ser Asp Lys Tyr Gly Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val | | | | | | |
| | 420 | | 425 | | 430 | |
| Gly Val Leu Phe Asn Asp Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly | | | | | | |
| | 435 | | 440 | | 445 | |
| Asp Ser Leu Gln Tyr Ile Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr | | | | | | |
| | 450 | | 455 | | 460 | |
| Val Ser Ser His Pro Asn Ser Leu Met Lys Lys Ile Thr Leu Leu Lys | | | | | | |
| | 465 | | 470 | | 475 | 480 |
| Tyr Phe Arg Asn Tyr Met Ser Glu His Leu Leu Lys Ala Gly Ala Asn | | | | | | |
| | 485 | | 490 | | 495 | |
| Ile Thr Pro Arg Glu Gly Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg | | | | | | |
| | 500 | | 505 | | 510 | |
| Thr Trp Phe Arg Thr Arg Ser Ala Ile Ile Leu His Leu Ser Asn Gly | | | | | | |
| | 515 | | 520 | | 525 | |
| Ser Val Gln Ile Asn Phe Phe Gln Asp His Thr Lys Leu Ile Leu Cys | | | | | | |
| | 530 | | 535 | | 540 | |

Pro Leu Met Ala Ala Val Thr Tyr Ile Asp Glu Lys Arg Asp Phe Arg
 545 550 555 560

Thr Tyr Arg Leu Ser Leu Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu
 565 570 575

Ala Ser Arg Leu Arg Tyr Ala Arg Thr Met Val Asp Lys Leu Leu Ser
 580 585 590

Ser Arg Ser Ala Ser Asn Arg Leu Lys Ala Ser
 595 600

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 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Xaa = Pro or Phe

<220>
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 <222> (2)..(2)
 <223> Xaa = Pro or a hydrophobic amino acid

<220>
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 <222> (3)..(3)
 <223> Xaa = Ala, Gln, or a hydrophobic amino acid

<220>
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 <222> (4)..(4)
 <223> Xaa = Thr, Gln, His or Met

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> Xaa = phosphorylated Thr or phosphorylated Ser

<220>
 <221> MISC_FEATURE
 <222> (7)..(7)
 <223> Xaa = Pro or any amino acid

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<210> 3

<211> 15

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<210> 4

<211> 685

<212> PRT

<213> Homo sapiens

<400> 4

Met Glu Leu Leu Arg Thr Ile Thr Tyr Gln Pro Ala Ala Ser Thr Lys
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Met Cys Glu Gln Ala Leu Gly Lys Gly Cys Gly Ala Asp Ser Lys Lys
20 25 30

Lys Arg Pro Pro Gln Pro Pro Glu Glu Ser Gln Pro Pro Gln Ser Gln
35 40 45

Ala Gln Val Pro Pro Ala Ala Pro His His His His His His Ser His
50 55 60

Ser Gly Pro Glu Ile Ser Arg Ile Ile Val Asp Pro Thr Thr Gly Lys
65 70 75 80

Arg Tyr Cys Arg Gly Lys Val Leu Gly Lys Gly Gly Phe Ala Lys Cys
85 90 95

Tyr Glu Met Thr Asp Leu Thr Asn Asn Lys Val Tyr Ala Ala Lys Ile
 100 105 110

Ile Pro His Ser Arg Val Ala Lys Pro His Gln Arg Glu Lys Ile Asp
 115 120 125

Lys Glu Ile Glu Leu His Arg Ile Leu His His Lys His Val Val Gln
 130 135 140

Phe Tyr His Tyr Phe Glu Asp Lys Glu Asn Ile Tyr Ile Leu Leu Glu
 145 150 155 160

Tyr Cys Ser Arg Arg Ser Met Ala His Ile Leu Lys Ala Arg Lys Val
 165 170 175

Leu Thr Glu Pro Glu Val Arg Tyr Tyr Leu Arg Gln Ile Val Ser Gly
 180 185 190

Leu Lys Tyr Leu His Glu Gln Glu Ile Leu His Arg Asp Leu Lys Leu
 195 200 205

Gly Asn Phe Phe Ile Asn Glu Ala Met Glu Leu Lys Val Gly Asp Phe
 210 215 220

Gly Leu Ala Ala Arg Leu Glu Pro Leu Glu His Arg Arg Arg Thr Ile
 225 230 235 240

Cys Gly Thr Pro Asn Tyr Leu Ser Pro Glu Val Leu Asn Lys Gln Gly
 245 250 255

His Gly Cys Glu Ser Asp Ile Trp Ala Leu Gly Cys Val Met Tyr Thr
 260 265 270

Met Leu Leu Gly Arg Pro Pro Phe Glu Thr Thr Asn Leu Lys Glu Thr
 275 280 285

Tyr Arg Cys Ile Arg Glu Ala Arg Tyr Thr Met Pro Ser Ser Leu Leu
 290 295 300

Ala Pro Ala Lys His Leu Ile Ala Ser Met Leu Ser Lys Asn Pro Glu
 305 310 315 320

Asp Arg Pro Ser Leu Asp Asp Ile Ile Arg His Asp Phe Phe Leu Gln

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|-----------------------------------------------------------------|-----|-----|
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| Gly Phe Thr Pro Asp Arg Leu Ser Ser Ser Cys Cys His Thr Val Pro | | |
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| Asp Phe His Leu Ser Ser Pro Ala Lys Asn Phe Phe Lys Lys Ala Ala | | |
| 355 | 360 | 365 |
| Ala Ala Leu Phe Gly Gly Lys Lys Asp Lys Ala Arg Tyr Ile Asp Thr | | |
| 370 | 375 | 380 |
| His Asn Arg Val Ser Lys Glu Asp Glu Asp Ile Tyr Lys Leu Arg His | | |
| 385 | 390 | 395 |
| Asp Leu Lys Lys Thr Ser Ile Thr Gln Gln Pro Ser Lys His Arg Thr | | |
| 405 | 410 | 415 |
| Asp Glu Glu Leu Gln Pro Pro Thr Thr Thr Val Ala Arg Ser Gly Thr | | |
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| Pro Ala Val Glu Asn Lys Gln Gln Ile Gly Asp Ala Ile Arg Met Ile | | |
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| Val Arg Gly Thr Leu Gly Ser Cys Ser Ser Ser Ser Glu Cys Leu Glu | | |
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| Asp Ser Thr Met Gly Ser Val Ala Asp Thr Val Ala Arg Val Leu Arg | | |
| 465 | 470 | 475 |
| Gly Cys Leu Glu Asn Met Pro Glu Ala Asp Cys Ile Pro Lys Glu Gln | | |
| 485 | 490 | 495 |
| Leu Ser Thr Ser Phe Gln Trp Val Thr Lys Trp Val Asp Tyr Ser Asn | | |
| 500 | 505 | 510 |
| Lys Tyr Gly Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly Val Leu | | |
| 515 | 520 | 525 |
| Phe Asn Asn Gly Ala His Met Ser Leu Leu Pro Asp Lys Lys Thr Val | | |
| 530 | 535 | 540 |
| His Tyr Tyr Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala Thr Asp | | |
| 545 | 550 | 555 |
| | | 560 |

Ala Pro Glu Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr Phe Ser
565 570 575

His Tyr Met Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro Ser Val
580 585 590

Thr Asp Ile Arg Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu Lys Ser
595 600 605

Asp Lys Ala Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln Val Asn
610 615 620

Phe Tyr His Asp His Thr Lys Ile Ile Ile Cys Ser Gln Asn Glu Glu
625 630 635 640

Tyr Leu Leu Thr Tyr Ile Asn Glu Asp Arg Ile Ser Thr Thr Phe Arg
645 650 655

Leu Thr Thr Leu Leu Met Ser Gly Cys Ser Ser Glu Leu Lys Asn Arg
660 665 670

Met Glu Tyr Ala Leu Asn Met Leu Leu Gln Arg Cys Asn
675 680 685

<210> 5
<211> 646
<212> PRT
<213> Homo sapiens

<400> 5

Met Glu Pro Ala Ala Gly Phe Leu Ser Pro Arg Pro Phe Gln Arg Ala
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Ala Ala Ala Pro Ala Pro Pro Ala Gly Pro Gly Pro Pro Pro Ser Ala
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Leu Arg Gly Pro Glu Leu Glu Met Leu Ala Gly Leu Pro Thr Ser Asp
35 40 45

Pro Gly Arg Leu Ile Thr Asp Pro Arg Ser Gly Arg Thr Tyr Leu Lys
50 55 60

Gly Arg Leu Leu Gly Lys Gly Gly Phe Ala Arg Cys Tyr Glu Ala Thr
 65 70 75 80

Asp Thr Glu Thr Gly Ser Ala Tyr Ala Val Lys Val Ile Pro Gln Ser
 85 90 95

Arg Val Ala Lys Pro His Gln Arg Glu Lys Ile Leu Asn Glu Ile Glu
 100 105 110

Leu His Arg Asp Leu Gln His Arg His Ile Val Arg Phe Ser His His
 115 120 125

Phe Glu Asp Ala Asp Asn Ile Tyr Ile Phe Leu Glu Leu Cys Ser Arg
 130 135 140

Lys Ser Leu Ala His Ile Trp Lys Ala Arg His Thr Leu Leu Glu Pro
 145 150 155 160

Glu Val Arg Tyr Tyr Leu Arg Gln Ile Leu Ser Gly Leu Lys Tyr Leu
 165 170 175

His Gln Arg Gly Ile Leu His Arg Asp Leu Lys Leu Gly Asn Phe Phe
 180 185 190

Ile Thr Glu Asn Met Glu Leu Lys Val Gly Asp Phe Gly Leu Ala Ala
 195 200 205

Arg Leu Glu Pro Pro Glu Gln Arg Lys Lys Thr Ile Cys Gly Thr Pro
 210 215 220

Asn Tyr Val Ala Pro Glu Val Leu Leu Arg Gln Gly His Gly Pro Glu
 225 230 235 240

Ala Asp Val Trp Ser Leu Gly Cys Val Met Tyr Thr Leu Leu Cys Gly
 245 250 255

Ser Pro Pro Phe Glu Thr Ala Asp Leu Lys Glu Thr Tyr Arg Cys Ile
 260 265 270

Lys Gln Val His Tyr Thr Leu Pro Ala Ser Leu Ser Leu Pro Ala Arg
 275 280 285

Gln Leu Leu Ala Ala Ile Leu Arg Ala Ser Pro Arg Asp Arg Pro Ser

| | | | | |
|-----------------------------------------------------------------|-----|-----|-----|---------|
| 290 | | 295 | | 300 |
| Ile Asp Gln Ile Leu Arg His Asp Phe Phe Thr Lys Gly Tyr Thr Pro | | | | |
| 305 | | 310 | | 315 320 |
| Asp Arg Leu Pro Ile Ser Ser Cys Val Thr Val Pro Asp Leu Thr Pro | | | | |
| | 325 | | 330 | 335 |
| Pro Asn Pro Ala Arg Ser Leu Phe Ala Lys Val Thr Lys Ser Leu Phe | | | | |
| | 340 | | 345 | 350 |
| Gly Arg Lys Lys Lys Ser Lys Asn His Ala Gln Glu Arg Asp Glu Val | | | | |
| | 355 | | 360 | 365 |
| Ser Gly Leu Val Ser Gly Leu Met Arg Thr Ser Val Gly His Gln Asp | | | | |
| | 370 | | 375 | 380 |
| Ala Arg Pro Glu Ala Pro Ala Ala Ser Gly Pro Ala Pro Val Ser Leu | | | | |
| | 385 | | 390 | 395 400 |
| Val Glu Thr Ala Pro Glu Asp Ser Ser Pro Arg Gly Thr Leu Ala Ser | | | | |
| | 405 | | 410 | 415 |
| Ser Gly Asp Gly Phe Glu Glu Gly Leu Thr Val Ala Thr Val Val Glu | | | | |
| | 420 | | 425 | 430 |
| Ser Ala Leu Cys Ala Leu Arg Asn Cys Ile Ala Phe Met Pro Pro Ala | | | | |
| | 435 | | 440 | 445 |
| Glu Gln Asn Pro Ala Pro Leu Ala Gln Pro Glu Pro Leu Val Trp Val | | | | |
| | 450 | | 455 | 460 |
| Ser Lys Trp Val Asp Tyr Ser Asn Lys Phe Gly Phe Gly Tyr Gln Leu | | | | |
| | 465 | | 470 | 475 480 |
| Ser Ser Arg Arg Val Ala Val Leu Phe Asn Asp Gly Thr His Met Ala | | | | |
| | 485 | | 490 | 495 |
| Leu Ser Ala Asn Arg Lys Thr Val His Tyr Asn Pro Thr Ser Thr Lys | | | | |
| | 500 | | 505 | 510 |
| His Phe Ser Phe Ser Val Gly Ala Val Pro Arg Ala Leu Gln Pro Gln | | | | |
| | 515 | | 520 | 525 |

Leu Gly Ile Leu Arg Tyr Phe Ala Ser Tyr Met Glu Gln His Leu Met
 530 535 540

Lys Gly Gly Asp Leu Pro Ser Val Glu Glu Val Glu Val Pro Ala Pro
 545 550 555 560

Pro Leu Leu Leu Gln Trp Val Lys Thr Asp Gln Ala Leu Leu Met Leu
 565 570 575

Phe Ser Asp Gly Thr Val Gln Val Asn Phe Tyr Gly Asp His Thr Lys
 580 585 590

Leu Ile Leu Ser Gly Trp Glu Pro Leu Leu Val Thr Phe Val Ala Arg
 595 600 605

Asn Arg Ser Ala Cys Thr Tyr Leu Ala Ser His Leu Arg Gln Leu Gly
 610 615 620

Cys Ser Pro Asp Leu Arg Gln Arg Leu Arg Tyr Ala Leu Arg Leu Leu
 625 630 635 640

Arg Asp Arg Ser Pro Ala
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<210> 6
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<220>
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 <222> (5)..(5)
 <223> PHOSPHORYLATION

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Pro Met Gln Ser Thr Pro Leu
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<210> 7
 <211> 4
 <212> PRT

<213> Artificial Sequence

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<223> synthetic

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<221> MISC_FEATURE

<222> (1)..(1)

<223> Xaa = Met, Tyr, Phe, Ile, Leu, His, or Lys

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> Xaa = Ala, His, Met, Thr, Phe, or Gln

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> Xaa = Ser, Ala, Gly, or Thr

<220>

<221> MISC_FEATURE

<222> (4)..(4)

<223> Xaa = Phosphorylated Serine or Phosphorylated Threonine

<400> 7

Xaa Xaa Xaa Xaa

1

<210> 8

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic

<220>

<221> MISC_FEATURE

<222> (1)..(1)

<223> Xaa = Any amino acid

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> Xaa = Met, Tyr, Phe, Ile, Leu, His, or Lys

<220>

<221> MISC_FEATURE

<222> (3)..(3)

<223> Xaa = Ala, His, Met, Thr, Phe, or Gln

<220>

<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Ser, Ala, Gly, or Thr

<220>
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<222> (5)..(5)
<223> Xaa = phosphorylated Ser or phosphorylated Thr

<220>
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<222> (6)..(6)
<223> Xaa = Pro, Met, or Asn

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = any amino acid

<400> 8

Xaa Xaa Xaa Xaa Xaa Xaa Xaa
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<210> 9
<211> 6
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<213> Artificial Sequence

<220>
<223> Synthetic

<220>
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<222> (4)..(4)
<223> Xaa = phosphorylated Threonine or phosphorylated Serine

<400> 9

Met Gln Ser Xaa Pro Leu
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<210> 10
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<222> (4)..(4)

<223> Xaa = phosphorylated Ser or phosphorylated Thr

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Tyr Asp Ile Xaa Gln Val Phe Pro Phe

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<210> 11

<211> 82899

<212> DNA

<213> Homo sapiens

<400> 11

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| tggaactacg agtgcgcgaga catggggccag agcgcatttc ccctgccccca ggcaaattcg | 180 |
| gcgctcactg cgtccccgca ggccactgac cttacaagac tacttgcccc agactcctgg | 240 |
| ggctggatgg gaattgtagt ctccctaaag agttgtacgt atcttttttaa ggcctagttt | 300 |
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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Asp | Leu | Ser | Ala | Leu | Arg | Val | Glu | Glu | Val | Gln | Asn | Val | Ile | Asn |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Met | Gln | Lys | Ile | Leu | Glu | Cys | Pro | Ile | Cys | Leu | Glu | Leu | Ile | Lys |
| | | | 20 | | | | | 25 | | | | | 30 | | |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Pro | Val | Ser | Thr | Lys | Cys | Asp | His | Ile | Phe | Cys | Lys | Phe | Cys | Met | 35 | 40 | 45 | |
| Leu | Lys | Leu | Leu | Asn | Gln | Lys | Lys | Gly | Pro | Ser | Gln | Cys | Pro | Leu | Cys | 50 | 55 | 60 | |
| Lys | Asn | Asp | Ile | Thr | Lys | Arg | Ser | Leu | Gln | Glu | Ser | Thr | Arg | Phe | Ser | 65 | 70 | 75 | 80 |
| Gln | Leu | Val | Glu | Glu | Leu | Leu | Lys | Ile | Ile | Cys | Ala | Phe | Gln | Leu | Asp | 85 | 90 | 95 | |
| Thr | Gly | Leu | Glu | Tyr | Ala | Asn | Ser | Tyr | Asn | Phe | Ala | Lys | Lys | Glu | Asn | 100 | 105 | 110 | |
| Asn | Ser | Pro | Glu | His | Leu | Lys | Asp | Glu | Val | Ser | Ile | Ile | Gln | Ser | Met | 115 | 120 | 125 | |
| Gly | Tyr | Arg | Asn | Arg | Ala | Lys | Arg | Leu | Leu | Gln | Ser | Glu | Pro | Glu | Asn | 130 | 135 | 140 | |
| Pro | Ser | Leu | Gln | Glu | Thr | Ser | Leu | Ser | Val | Gln | Leu | Ser | Asn | Leu | Gly | 145 | 150 | 155 | 160 |
| Thr | Val | Arg | Thr | Leu | Arg | Thr | Lys | Gln | Arg | Ile | Gln | Pro | Gln | Lys | Thr | 165 | 170 | 175 | |
| Ser | Val | Tyr | Ile | Glu | Leu | Gly | Ser | Asp | Ser | Ser | Glu | Asp | Thr | Val | Asn | 180 | 185 | 190 | |
| Lys | Ala | Thr | Tyr | Cys | Ser | Val | Gly | Asp | Gln | Glu | Leu | Leu | Gln | Ile | Thr | 195 | 200 | 205 | |
| Pro | Gln | Gly | Thr | Arg | Asp | Glu | Ile | Ser | Leu | Asp | Ser | Ala | Lys | Lys | Ala | 210 | 215 | 220 | |
| Ala | Cys | Glu | Phe | Ser | Glu | Thr | Asp | Val | Thr | Asn | Thr | Glu | His | His | Gln | 225 | 230 | 235 | 240 |
| Pro | Ser | Asn | Asn | Asp | Leu | Asn | Thr | Thr | Glu | Lys | Arg | Ala | Ala | Glu | Arg | 245 | 250 | 255 | |

His Pro Glu Lys Tyr Gln Gly Ser Ser Val Ser Asn Leu His Val Glu
 260 265 270

Pro Cys Gly Thr Asn Thr His Ala Ser Ser Leu Gln His Glu Asn Ser
 275 280 285

Ser Leu Leu Leu Thr Lys Asp Arg Met Asn Val Glu Lys Ala Glu Phe
 290 295 300

Cys Asn Lys Ser Lys Gln Pro Gly Leu Ala Arg Ser Gln His Asn Arg
 305 310 315 320

Trp Ala Gly Ser Lys Glu Thr Cys Asn Asp Arg Arg Thr Pro Ser Thr
 325 330 335

Glu Lys Lys Val Asp Leu Asn Ala Asp Pro Leu Cys Glu Arg Lys Glu
 340 345 350

Trp Asn Lys Gln Lys Leu Pro Cys Ser Glu Asn Pro Arg Asp Thr Glu
 355 360 365

Asp Val Pro Trp Ile Thr Leu Asn Ser Ser Ile Gln Lys Val Asn Glu
 370 375 380

Trp Phe Ser Arg Ser Asp Glu Leu Leu Gly Ser Asp Asp Ser His Asp
 385 390 395 400

Gly Glu Ser Glu Ser Asn Ala Lys Val Ala Asp Val Leu Asp Val Leu
 405 410 415

Asn Glu Val Asp Glu Tyr Ser Gly Ser Ser Glu Lys Ile Asp Leu Leu
 420 425 430

Ala Ser Asp Pro His Glu Ala Leu Ile Cys Lys Ser Glu Arg Val His
 435 440 445

Ser Lys Ser Val Glu Ser Asn Ile Glu Asp Lys Ile Phe Gly Lys Thr
 450 455 460

Tyr Arg Lys Lys Ala Ser Leu Pro Asn Leu Ser His Val Thr Glu Asn
 465 470 475 480

Leu Ile Ile Gly Ala Phe Val Thr Glu Pro Gln Ile Ile Gln Glu Arg

| | | |
|-----------------------------------------------------------------|-----|-----|
| 485 | 490 | 495 |
| Pro Leu Thr Asn Lys Leu Lys Arg Lys Arg Arg Pro Thr Ser Gly Leu | | |
| 500 | 505 | 510 |
| His Pro Glu Asp Phe Ile Lys Lys Ala Asp Leu Ala Val Gln Lys Thr | | |
| 515 | 520 | 525 |
| Pro Glu Met Ile Asn Gln Gly Thr Asn Gln Thr Glu Gln Asn Gly Gln | | |
| 530 | 535 | 540 |
| Val Met Asn Ile Thr Asn Ser Gly His Glu Asn Lys Thr Lys Gly Asp | | |
| 545 | 550 | 555 |
| Ser Ile Gln Asn Glu Lys Asn Pro Asn Pro Ile Glu Ser Leu Glu Lys | | |
| 565 | 570 | 575 |
| Glu Ser Ala Phe Lys Thr Lys Ala Glu Pro Ile Ser Ser Ser Ile Ser | | |
| 580 | 585 | 590 |
| Asn Met Glu Leu Glu Leu Asn Ile His Asn Ser Lys Ala Pro Lys Lys | | |
| 595 | 600 | 605 |
| Asn Arg Leu Arg Arg Lys Ser Ser Thr Arg His Ile His Ala Leu Glu | | |
| 610 | 615 | 620 |
| Leu Val Val Ser Arg Asn Leu Ser Pro Pro Asn Cys Thr Glu Leu Gln | | |
| 625 | 630 | 635 |
| Ile Asp Ser Cys Ser Ser Ser Glu Glu Ile Lys Lys Lys Lys Tyr Asn | | |
| 645 | 650 | 655 |
| Gln Met Pro Val Arg His Ser Arg Asn Leu Gln Leu Met Glu Gly Lys | | |
| 660 | 665 | 670 |
| Glu Pro Ala Thr Gly Ala Lys Lys Ser Asn Lys Pro Asn Glu Gln Thr | | |
| 675 | 680 | 685 |
| Ser Lys Arg His Asp Ser Asp Thr Phe Pro Glu Leu Lys Leu Thr Asn | | |
| 690 | 695 | 700 |
| Ala Pro Gly Ser Phe Thr Lys Cys Ser Asn Thr Ser Glu Leu Lys Glu | | |
| 705 | 710 | 715 |
| | | 720 |

Phe Val Asn Pro Ser Leu Pro Arg Glu Glu Lys Glu Glu Lys Leu Glu
725 730 735

Thr Val Lys Val Ser Asn Asn Ala Glu Asp Pro Lys Asp Leu Met Leu
740 745 750

Ser Gly Glu Arg Val Leu Gln Thr Glu Arg Ser Val Glu Ser Ser Ser
755 760 765

Ile Ser Leu Val Pro Gly Thr Asp Tyr Gly Thr Gln Glu Ser Ile Ser
770 775 780

Leu Leu Glu Val Ser Thr Leu Gly Lys Ala Lys Thr Glu Pro Asn Lys
785 790 795 800

Cys Val Ser Gln Cys Ala Ala Phe Glu Asn Pro Lys Gly Leu Ile His
805 810 815

Gly Cys Ser Lys Asp Asn Arg Asn Asp Thr Glu Gly Phe Lys Tyr Pro
820 825 830

Leu Gly His Glu Val Asn His Ser Arg Glu Thr Ser Ile Glu Met Glu
835 840 845

Glu Ser Glu Leu Asp Ala Gln Tyr Leu Gln Asn Thr Phe Lys Val Ser
850 855 860

Lys Arg Gln Ser Phe Ala Pro Phe Ser Asn Pro Gly Asn Ala Glu Glu
865 870 875 880

Glu Cys Ala Thr Phe Ser Ala His Ser Gly Ser Leu Lys Lys Gln Ser
885 890 895

Pro Lys Val Thr Phe Glu Cys Glu Gln Lys Glu Glu Asn Gln Gly Lys
900 905 910

Asn Glu Ser Asn Ile Lys Pro Val Gln Thr Val Asn Ile Thr Ala Gly
915 920 925

Phe Pro Val Val Gly Gln Lys Asp Lys Pro Val Asp Asn Ala Lys Cys
930 935 940

Ser Ile Lys Gly Gly Ser Arg Phe Cys Leu Ser Ser Gln Phe Arg Gly
 945 950 955 960

Asn Glu Thr Gly Leu Ile Thr Pro Asn Lys His Gly Leu Leu Gln Asn
 965 970 975

Pro Tyr Arg Ile Pro Pro Leu Phe Pro Ile Lys Ser Phe Val Lys Thr
 980 985 990

Lys Cys Lys Lys Asn Leu Leu Glu Glu Asn Phe Glu Glu His Ser Met
 995 1000 1005

Ser Pro Glu Arg Glu Met Gly Asn Glu Asn Ile Pro Ser Thr Val
 1010 1015 1020

Ser Thr Ile Ser Arg Asn Asn Ile Arg Glu Asn Val Phe Lys Glu
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Ala Ser Ser Ser Asn Ile Asn Glu Val Gly Ser Ser Thr Asn Glu
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Val Gly Ser Ser Ile Asn Glu Ile Gly Ser Ser Asp Glu Asn Ile
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Gln Ala Glu Leu Gly Arg Asn Arg Gly Pro Lys Leu Asn Ala Met
 1070 1075 1080

Leu Arg Leu Gly Val Leu Gln Pro Glu Val Tyr Lys Gln Ser Leu
 1085 1090 1095

Pro Gly Ser Asn Cys Lys His Pro Glu Ile Lys Lys Gln Glu Tyr
 1100 1105 1110

Glu Glu Val Val Gln Thr Val Asn Thr Asp Phe Ser Pro Tyr Leu
 1115 1120 1125

Ile Ser Asp Asn Leu Glu Gln Pro Met Gly Ser Ser His Ala Ser
 1130 1135 1140

Gln Val Cys Ser Glu Thr Pro Asp Asp Leu Leu Asp Asp Gly Glu
 1145 1150 1155

| | | | | | |
|---------|-----------------|------|-----------------|------|-------------|
| Ile Lys | Glu Asp Thr Ser | Phe | Ala Glu Asn Asp | Ile | Lys Glu Ser |
| 1160 | | 1165 | | 1170 | |
| Ser Ala | Val Phe Ser Lys | Ser | Val Gln Lys Gly | Glu | Leu Ser Arg |
| 1175 | | 1180 | | 1185 | |
| Ser Pro | Ser Pro Phe Thr | His | Thr His Leu Ala | Gln | Gly Tyr Arg |
| 1190 | | 1195 | | 1200 | |
| Arg Gly | Ala Lys Lys Leu | Glu | Ser Ser Glu Glu | Asn | Leu Ser Ser |
| 1205 | | 1210 | | 1215 | |
| Glu Asp | Glu Glu Leu Pro | Cys | Phe Gln His Leu | Leu | Phe Gly Lys |
| 1220 | | 1225 | | 1230 | |
| Val Asn | Asn Ile Pro Ser | Gln | Ser Thr Arg His | Ser | Thr Val Ala |
| 1235 | | 1240 | | 1245 | |
| Thr Glu | Cys Leu Ser Lys | Asn | Thr Glu Glu Asn | Leu | Leu Ser Leu |
| 1250 | | 1255 | | 1260 | |
| Lys Asn | Ser Leu Asn Asp | Cys | Ser Asn Gln Val | Ile | Leu Ala Lys |
| 1265 | | 1270 | | 1275 | |
| Ala Ser | Gln Glu His His | Leu | Ser Glu Glu Thr | Lys | Cys Ser Ala |
| 1280 | | 1285 | | 1290 | |
| Ser Leu | Phe Ser Ser Gln | Cys | Ser Glu Leu Glu | Asp | Leu Thr Ala |
| 1295 | | 1300 | | 1305 | |
| Asn Thr | Asn Thr Gln Asp | Pro | Phe Leu Ile Gly | Ser | Ser Lys Gln |
| 1310 | | 1315 | | 1320 | |
| Met Arg | His Gln Ser Glu | Ser | Gln Gly Val Gly | Leu | Ser Asp Lys |
| 1325 | | 1330 | | 1335 | |
| Glu Leu | Val Ser Asp Asp | Glu | Glu Arg Gly Thr | Gly | Leu Glu Glu |
| 1340 | | 1345 | | 1350 | |
| Asn Asn | Gln Glu Glu Gln | Ser | Met Asp Ser Asn | Leu | Gly Glu Ala |
| 1355 | | 1360 | | 1365 | |
| Ala Ser | Gly Cys Glu Ser | Glu | Thr Ser Val Ser | Glu | Asp Cys Ser |

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| 1370 | | 1375 | | 1380 |
| Gly Leu Ser Ser Gln Ser Asp Ile Leu Thr Thr Gln Gln Arg Asp | | | | |
| 1385 | | 1390 | | 1395 |
| Thr Met Gln His Asn Leu Ile Lys Leu Gln Gln Glu Met Ala Glu | | | | |
| 1400 | | 1405 | | 1410 |
| Leu Glu Ala Val Leu Glu Gln His Gly Ser Gln Pro Ser Asn Ser | | | | |
| 1415 | | 1420 | | 1425 |
| Tyr Pro Ser Ile Ile Ser Asp Ser Ser Ala Leu Glu Asp Leu Arg | | | | |
| 1430 | | 1435 | | 1440 |
| Asn Pro Glu Gln Ser Thr Ser Glu Lys Ala Val Leu Thr Ser Gln | | | | |
| 1445 | | 1450 | | 1455 |
| Lys Ser Ser Glu Tyr Pro Ile Ser Gln Asn Pro Glu Gly Leu Ser | | | | |
| 1460 | | 1465 | | 1470 |
| Ala Asp Lys Phe Glu Val Ser Ala Asp Ser Ser Thr Ser Lys Asn | | | | |
| 1475 | | 1480 | | 1485 |
| Lys Glu Pro Gly Val Glu Arg Ser Ser Pro Ser Lys Cys Pro Ser | | | | |
| 1490 | | 1495 | | 1500 |
| Leu Asp Asp Arg Trp Tyr Met His Ser Cys Ser Gly Ser Leu Gln | | | | |
| 1505 | | 1510 | | 1515 |
| Asn Arg Asn Tyr Pro Ser Gln Glu Glu Leu Ile Lys Val Val Asp | | | | |
| 1520 | | 1525 | | 1530 |
| Val Glu Glu Gln Gln Leu Glu Glu Ser Gly Pro His Asp Leu Thr | | | | |
| 1535 | | 1540 | | 1545 |
| Glu Thr Ser Tyr Leu Pro Arg Gln Asp Leu Glu Gly Thr Pro Tyr | | | | |
| 1550 | | 1555 | | 1560 |
| Leu Glu Ser Gly Ile Ser Leu Phe Ser Asp Asp Pro Glu Ser Asp | | | | |
| 1565 | | 1570 | | 1575 |
| Pro Ser Glu Asp Arg Ala Pro Glu Ser Ala Arg Val Gly Asn Ile | | | | |
| 1580 | | 1585 | | 1590 |

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|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Pro | Ser | Ser | Thr | Ser | Ala | Leu | Lys | Val | Pro | Gln | Leu | Lys | Val | Ala |
| 1595 | | | | | | 1600 | | | | | 1605 | | | |
| Glu | Ser | Ala | Gln | Ser | Pro | Ala | Ala | Ala | His | Thr | Thr | Asp | Thr | Ala |
| 1610 | | | | | | 1615 | | | | | 1620 | | | |
| Gly | Tyr | Asn | Ala | Met | Glu | Glu | Ser | Val | Ser | Arg | Glu | Lys | Pro | Glu |
| 1625 | | | | | | 1630 | | | | | 1635 | | | |
| Leu | Thr | Ala | Ser | Thr | Glu | Arg | Val | Asn | Lys | Arg | Met | Ser | Met | Val |
| 1640 | | | | | | 1645 | | | | | 1650 | | | |
| Val | Ser | Gly | Leu | Thr | Pro | Glu | Glu | Phe | Met | Leu | Val | Tyr | Lys | Phe |
| 1655 | | | | | | 1660 | | | | | 1665 | | | |
| Ala | Arg | Lys | His | His | Ile | Thr | Leu | Thr | Asn | Leu | Ile | Thr | Glu | Glu |
| 1670 | | | | | | 1675 | | | | | 1680 | | | |
| Thr | Thr | His | Val | Val | Met | Lys | Thr | Asp | Ala | Glu | Phe | Val | Cys | Glu |
| 1685 | | | | | | 1690 | | | | | 1695 | | | |
| Arg | Thr | Leu | Lys | Tyr | Phe | Leu | Gly | Ile | Ala | Gly | Gly | Lys | Trp | Val |
| 1700 | | | | | | 1705 | | | | | 1710 | | | |
| Val | Ser | Tyr | Phe | Trp | Val | Thr | Gln | Ser | Ile | Lys | Glu | Arg | Lys | Met |
| 1715 | | | | | | 1720 | | | | | 1725 | | | |
| Leu | Asn | Glu | His | Asp | Phe | Glu | Val | Arg | Gly | Asp | Val | Val | Asn | Gly |
| 1730 | | | | | | 1735 | | | | | 1740 | | | |
| Arg | Asn | His | Gln | Gly | Pro | Lys | Arg | Ala | Arg | Glu | Ser | Gln | Asp | Arg |
| 1745 | | | | | | 1750 | | | | | 1755 | | | |
| Lys | Ile | Phe | Arg | Gly | Leu | Glu | Ile | Cys | Cys | Tyr | Gly | Pro | Phe | Thr |
| 1760 | | | | | | 1765 | | | | | 1770 | | | |
| Asn | Met | Pro | Thr | Asp | Gln | Leu | Glu | Trp | Met | Val | Gln | Leu | Cys | Gly |
| 1775 | | | | | | 1780 | | | | | 1785 | | | |
| Ala | Ser | Val | Val | Lys | Glu | Leu | Ser | Ser | Phe | Thr | Leu | Gly | Thr | Gly |
| 1790 | | | | | | 1795 | | | | | 1800 | | | |

Val His Pro Ile Val Val Val Gln Pro Asp Ala Trp Thr Glu Asp
1805 1810 1815

Asn Gly Phe His Ala Ile Gly Gln Met Cys Glu Ala Pro Val Val
1820 1825 1830

Thr Arg Glu Trp Val Leu Asp Ser Val Ala Leu Tyr Gln Cys Gln
1835 1840 1845

Glu Leu Asp Thr Tyr Leu Ile Pro Gln Ile Pro His Ser His Tyr
1850 1855 1860

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| gatgtctgat aagcaactgc tggccacctg gaaaaggata atccaggcac atggcggcac | 1200 |
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| agctaattgc cagccttctt ccaaaagagc cagaattgaa gacgtaccac ctcccactaa | 1860 |
| aaagctaact ccagaattga ccccttttgt gcttttctact ggattcgagc ctgtccaggt | 1920 |
| tcaacagtat attaagaagc tctacattct tgggtggagag gttgcggagt ctgcacagaa | 1980 |
| gtgcacacac ctcatcgtcc gcaaagtgcac tcgcaccgtg aagttcctga cggcgatttc | 2040 |
| tgtcgtgaag cacatagtga cgccagagtg gctggaagaa tgcttcaggt gtcagaagtt | 2100 |
| cattgatgag cagaactaca ttctccgaga tgctgaggca gaagtacttt tctctttcag | 2160 |
| cttggaagaa tccttaaaac gggcacacgt ttctccactc ttttaaggcaa aatattttta | 2220 |
| catcacacct ggaatctgcc caagtctttc cactatgaag gcaatcgtag agtgtgcagg | 2280 |
| aggaaagggtg ttatccaagc agccatcttt ccggaagctc atggagcaca agcagaactc | 2340 |
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| ttttgccaga ggcatagatg ttcacaatgc agagtctgtt ctgactggag tgctcactca | 2460 |
| aacgctggac tatgaatcat ataagtttaa ctgatggcgt ctaggctgcc gtgcatgtcg | 2520 |
| actcctgcgg tgcggggctg gctgtctggc tggcgaggag ctgctgcgct tccttcacat | 2580 |
| gctcttgttt tccagctgct ttcttggggg atcagactgt gaagcaggaa gacagatata | 2640 |
| ataaatatac tgcacttttt taagatgtgc aattttattc tgaggaaaca taaattatgt | 2700 |
| tttgtattat atgactttta gagcccacat taggttttat gattcatttg ccaggttttt | 2760 |

| | | | | | | |
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| ccttgctatc | tctaaattat | ggatgttaaa | gatttgaaat | gttttgact | ttgattat | 2880 |
| ttattttctta | tactctgttt | tcttttatat | tgatatcttg | cccacatttt | aaataaatgt | 2940 |
| acttttgaac | ttaaaaaaaa | aaaaaaaaa | | | | 2969 |

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| gcaggttatt | cagcttctca | aggctggaaa | agcgaaggaa | gtttcctaca | atgcactagc | 180 |
| ctcacacata | atctcagagg | atggggacaa | tccagagggtg | ggagaagctc | gggaagtctt | 240 |
| tgacttacct | gttgtaaagc | cttcttgggt | gattctgtcc | gttcagtgtg | gaactcttct | 300 |
| gccagtaa | ggtttttctc | cagaatcatg | tcagat | tttggaatca | ctgcctgcct | 360 |
| ttctcaggtg | tcattctgaag | acagaagtgc | cctgtgggct | ttggttacgt | tctatggggg | 420 |
| agattgccag | ctaaccctca | ataagaaatg | cacgcatttg | attgttccag | agccaaaggg | 480 |
| ggagaaatac | gaatgtgctt | taaagcgagc | aagtattaaa | attgtgactc | ctgactgggt | 540 |
| tctggattgc | gtatcagaga | aaacccaaaa | ggacgaagca | ttttatcatc | ctcgtctgat | 600 |
| tatttatgaa | gaggaagaag | aggaagagga | agaggaggag | gaagtagaaa | atgaggaaca | 660 |
| agattctcag | aatgagggtg | gtacagatga | gaagtcaagc | cctgccagct | ctcaagaagg | 720 |
| gtctccttca | ggtgaccagc | agttttcacc | taaatccaac | actgaaaaat | ctaaagggga | 780 |
| attaatgttt | gatgattctt | cagattcatc | accggaaaaa | caggagagaa | atttaaactg | 840 |
| gaccccgggc | gaagtccac | agttagctgc | agcaaacgc | aggctgcctc | agggaaagga | 900 |
| gcctggggtg | attaacttgt | gtgccaatgt | cccacccgtc | ccaggtaaca | ttttgcccc | 960 |
| tgagggtccg | ggtaatttaa | tggctgctgg | acaaaacctc | caaagttctg | aaagatcaga | 1020 |
| aatgatagct | acctggagtc | cagctgtacg | gacactgagg | aatattacta | ataatgctga | 1080 |
| cattcagcag | atgaaccggc | catcaaatgt | agcacatc | ttacagactc | tttcagcacc | 1140 |
| tacgaaaaat | ttagaacagc | aggtgaatca | cagccagcag | ggacatacaa | atgccaatgc | 1200 |
| agtgctgttt | agccaagtga | aagtgactcc | agagacacac | atgctacagc | agcagcagca | 1260 |

| | | | | | | |
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| gctccagcag | cagcagcagc | agcagatctc | tcagcaacct | tacccccagc | agccgcccga | 1380 |
| tccattttca | cagcaacagc | agcagcagca | gcaagcccat | ccgcatcagt | tttcacagca | 1440 |
| acagctacag | tttccacagc | aacagttgca | tcctccacag | cagctgcac | gccctcagca | 1500 |
| gcagctccag | ccctttcagc | agcagcatgc | cctgcagcag | cagttccatc | agctgcagca | 1560 |
| gcaccagctc | cagcagcagc | agcttgccca | gctccagcag | cagcacagcc | tgctccagca | 1620 |
| gcagcagcaa | cagcagattc | agcagcagca | gctccagcgc | atgcaccagc | agcagcagca | 1680 |
| gcagcagatg | caaagtcaga | cagcgccaca | cttgagtcag | acgtcacagg | cgctgcagca | 1740 |
| tcaggttcca | cctcagcagc | ccccgcagca | gcagcagcaa | cagcagccac | caccatcgcc | 1800 |
| tcagcagcat | cagctttttg | gacatgatcc | agcagtggag | attccagaag | aaggcttctt | 1860 |
| attgggatgt | gtgtttgcaa | ttgcggatta | tccagagcag | atgtctgata | agcaactgct | 1920 |
| ggccacctgg | aaaaggataa | tccaggcaca | tggcggcact | gttgaccca | ccttcacgag | 1980 |
| tcgatgcacg | caccttctct | gtgagagtca | agtcagcagc | gcgtatgcac | aggcaataag | 2040 |
| agaaagaaag | agatgtgtta | ctgcacactg | gttaaacaca | gtcttaaaga | agaagaaaat | 2100 |
| ggtaccgccc | caccgagccc | ttcacttccc | agtggccttc | ccaccaggag | gaaagccatg | 2160 |
| ttcacagcat | attatttctg | tgactggatt | tgttgatagt | gacagagatg | acctaaaatt | 2220 |
| aatggcttat | ttggcaggtg | ccaaatatac | gggttatcta | tgccgcagca | acacagtcct | 2280 |
| catctgtaaa | gaaccaactg | gtttaaagta | tgaaaaagcc | aaagagtgga | ggataccctg | 2340 |
| tgtcaacgcc | cagtggcttg | gcgacattct | tctgggaaac | tttgaggcac | tgaggcagat | 2400 |
| tcagtatagt | cgctacacgg | cattcagtct | gcaggatcca | tttgccccta | cccagcattt | 2460 |
| agttttaaat | cttttagatg | cttgagagat | tcccttaaaa | gtgtctgcag | agttgttgat | 2520 |
| gagtataaga | ctacctcca | aactgaaaca | gaatgaagta | gctaagtgtc | agccttcttc | 2580 |
| caaaagagcc | agaattgaag | acgtaccacc | tcccactaaa | aagctaactc | cagaattgac | 2640 |
| cccttttgtg | cttttcactg | gattcgagcc | tgtccagggt | caacagtata | ttaagaagct | 2700 |
| ctacattctt | ggtggagagg | ttgcggagtc | tgacacagaag | tgacacacacc | tcattgccag | 2760 |
| caaagtgact | cgcacccgtga | agttcctgac | ggcgatttct | gtcgtgaagc | acatagtgac | 2820 |
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<400> 15

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Ala Thr Trp Ser Pro Ala Val Arg Thr Leu Arg Asn Ile Thr Asn Asn
20          25          30

```

```

Ala Asp Ile Gln Gln Met Asn Arg Pro Ser Asn Val Ala His Ile Leu
35          40          45

```

```

Gln Thr Leu Ser Ala Pro Thr Lys Asn Leu Glu Gln Gln Val Asn His
50          55          60

```

```

Ser Gln Gln Gly His Thr Asn Ala Asn Ala Val Leu Phe Ser Gln Val
65          70          75          80

```

```

Lys Val Thr Pro Glu Thr His Met Leu Gln Gln Gln Gln Gln Ala Gln

```

| 85 | | | | | 90 | | | | | 95 | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gln | Gln | Gln | Gln | Gln | His | Pro | Val | Leu | His | Leu | Gln | Pro | Gln | Gln | Ile | |
| 100 | | | | | 105 | | | | | 110 | | | | | | |
| Met | Gln | Leu | Gln | Gln | Gln | Gln | Gln | Gln | Gln | Ile | Ser | Gln | Gln | Pro | Tyr | |
| 115 | | | | | 120 | | | | | 125 | | | | | | |
| Pro | Gln | Gln | Pro | Pro | His | Pro | Phe | Ser | Gln | Gln | Gln | Gln | Gln | Gln | Gln | |
| 130 | | | | | 135 | | | | | 140 | | | | | | |
| Gln | Ala | His | Pro | His | Gln | Phe | Ser | Gln | Gln | Gln | Leu | Gln | Phe | Pro | Gln | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Gln | Gln | Leu | His | Pro | Pro | Gln | Gln | Leu | His | Arg | Pro | Gln | Gln | Gln | Leu | |
| 165 | | | | | 170 | | | | | 175 | | | | | | |
| Gln | Pro | Phe | Gln | Gln | Gln | His | Ala | Leu | Gln | Gln | Gln | Phe | His | Gln | Leu | |
| 180 | | | | | 185 | | | | | 190 | | | | | | |
| Gln | Gln | His | Gln | Leu | Gln | Gln | Gln | Gln | Leu | Ala | Gln | Leu | Gln | Gln | Gln | |
| 195 | | | | | 200 | | | | | 205 | | | | | | |
| His | Ser | Leu | Leu | Gln | Gln | Gln | Gln | Gln | Gln | Gln | Ile | Gln | Gln | Gln | Gln | |
| 210 | | | | | 215 | | | | | 220 | | | | | | |
| Leu | Gln | Arg | Met | His | Gln | Gln | Gln | Gln | Gln | Gln | Gln | Met | Gln | Ser | Gln | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| Thr | Ala | Pro | His | Leu | Ser | Gln | Thr | Ser | Gln | Ala | Leu | Gln | His | Gln | Val | |
| 245 | | | | | 250 | | | | | 255 | | | | | | |
| Pro | Pro | Gln | Gln | Pro | Pro | Gln | Gln | Gln | Gln | Gln | Gln | Gln | Pro | Pro | Pro | |
| 260 | | | | | 265 | | | | | 270 | | | | | | |
| Ser | Pro | Gln | Gln | His | Gln | Leu | Phe | Gly | His | Asp | Pro | Ala | Val | Glu | Ile | |
| 275 | | | | | 280 | | | | | 285 | | | | | | |
| Pro | Glu | Glu | Gly | Phe | Leu | Leu | Gly | Cys | Val | Phe | Ala | Ile | Ala | Asp | Tyr | |
| 290 | | | | | 295 | | | | | 300 | | | | | | |
| Pro | Glu | Gln | Met | Ser | Asp | Lys | Gln | Leu | Leu | Ala | Thr | Trp | Lys | Arg | Ile | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |

Ile Gln Ala His Gly Gly Thr Val Asp Pro Thr Phe Thr Ser Arg Cys
 325 330 335

Thr His Leu Leu Cys Glu Ser Gln Val Ser Ser Ala Tyr Ala Gln Ala
 340 345 350

Ile Arg Glu Arg Lys Arg Cys Val Thr Ala His Trp Leu Asn Thr Val
 355 360 365

Leu Lys Lys Lys Lys Met Val Pro Pro His Arg Ala Leu His Phe Pro
 370 375 380

Val Ala Phe Pro Pro Gly Gly Lys Pro Cys Ser Gln His Ile Ile Ser
 385 390 395 400

Val Thr Gly Phe Val Asp Ser Asp Arg Asp Asp Leu Lys Leu Met Ala
 405 410 415

Tyr Leu Ala Gly Ala Lys Tyr Thr Gly Tyr Leu Cys Arg Ser Asn Thr
 420 425 430

Val Leu Ile Cys Lys Glu Pro Thr Gly Leu Lys Tyr Glu Lys Ala Lys
 435 440 445

Glu Trp Arg Ile Pro Cys Val Asn Ala Gln Trp Leu Gly Asp Ile Leu
 450 455 460

Leu Gly Asn Phe Glu Ala Leu Arg Gln Ile Gln Tyr Ser Arg Tyr Thr
 465 470 475 480

Ala Phe Ser Leu Gln Asp Pro Phe Ala Pro Thr Gln His Leu Val Leu
 485 490 495

Asn Leu Leu Asp Ala Trp Arg Val Pro Leu Lys Val Ser Ala Glu Leu
 500 505 510

Leu Met Ser Ile Arg Leu Pro Pro Lys Leu Lys Gln Asn Glu Val Ala
 515 520 525

Asn Val Gln Pro Ser Ser Lys Arg Ala Arg Ile Glu Asp Val Pro Pro
 530 535 540

Pro Thr Lys Lys Leu Thr Pro Glu Leu Thr Pro Phe Val Leu Phe Thr
 545 550 555 560

Gly Phe Glu Pro Val Gln Val Gln Gln Tyr Ile Lys Lys Leu Tyr Ile
 565 570 575

Leu Gly Gly Glu Val Ala Glu Ser Ala Gln Lys Cys Thr His Leu Ile
 580 585 590

Ala Ser Lys Val Thr Arg Thr Val Lys Phe Leu Thr Ala Ile Ser Val
 595 600 605

Val Lys His Ile Val Thr Pro Glu Trp Leu Glu Glu Cys Phe Arg Cys
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Gln Lys Phe Ile Asp Glu Gln Asn Tyr Ile Leu Arg Asp Ala Glu Ala
 625 630 635 640

Glu Val Leu Phe Ser Phe Ser Leu Glu Glu Ser Leu Lys Arg Ala His
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Val Ser Pro Leu Phe Lys Ala Lys Tyr Phe Tyr Ile Thr Pro Gly Ile
 660 665 670

Cys Pro Ser Leu Ser Thr Met Lys Ala Ile Val Glu Cys Ala Gly Gly
 675 680 685

Lys Val Leu Ser Lys Gln Pro Ser Phe Arg Lys Leu Met Glu His Lys
 690 695 700

Gln Asn Ser Ser Leu Ser Glu Ile Ile Leu Ile Ser Cys Glu Asn Asp
 705 710 715 720

Leu His Leu Cys Arg Glu Tyr Phe Ala Arg Gly Ile Asp Val His Asn
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Ala Glu Phe Val Leu Thr Gly Val Leu Thr Gln Thr Leu Asp Tyr Glu
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Ser Tyr Lys Phe Asn
 755

<210> 16
 <211> 1069
 <212> PRT
 <213> Homo sapiens

<400> 16

Met Ser Asp Gln Ala Pro Lys Val Pro Glu Glu Met Phe Arg Glu Val
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 20 25 30

Lys Ala Gly Lys Ala Lys Glu Val Ser Tyr Asn Ala Leu Ala Ser His
 35 40 45

Ile Ile Ser Glu Asp Gly Asp Asn Pro Glu Val Gly Glu Ala Arg Glu
 50 55 60

Val Phe Asp Leu Pro Val Val Lys Pro Ser Trp Val Ile Leu Ser Val
 65 70 75 80

Gln Cys Gly Thr Leu Leu Pro Val Asn Gly Phe Ser Pro Glu Ser Cys
 85 90 95

Gln Ile Phe Phe Gly Ile Thr Ala Cys Leu Ser Gln Val Ser Ser Glu
 100 105 110

Asp Arg Ser Ala Leu Trp Ala Leu Val Thr Phe Tyr Gly Gly Asp Cys
 115 120 125

Gln Leu Thr Leu Asn Lys Lys Cys Thr His Leu Ile Val Pro Glu Pro
 130 135 140

Lys Gly Glu Lys Tyr Glu Cys Ala Leu Lys Arg Ala Ser Ile Lys Ile
 145 150 155 160

Val Thr Pro Asp Trp Val Leu Asp Cys Val Ser Glu Lys Thr Lys Lys
 165 170 175

Asp Glu Ala Phe Tyr His Pro Arg Leu Ile Ile Tyr Glu Glu Glu Glu
 180 185 190

Glu Glu Glu Glu Glu Glu Glu Glu Val Glu Asn Glu Glu Gln Asp Ser
 195 200 205

Gln Asn Glu Gly Ser Thr Asp Glu Lys Ser Ser Pro Ala Ser Ser Gln
 210 215 220

Glu Gly Ser Pro Ser Gly Asp Gln Gln Phe Ser Pro Lys Ser Asn Thr
 225 230 235 240

Glu Lys Ser Lys Gly Glu Leu Met Phe Asp Asp Ser Ser Asp Ser Ser
 245 250 255

Pro Glu Lys Gln Glu Arg Asn Leu Asn Trp Thr Pro Ala Glu Val Pro
 260 265 270

Gln Leu Ala Ala Ala Lys Arg Arg Leu Pro Gln Gly Lys Glu Pro Gly
 275 280 285

Leu Ile Asn Leu Cys Ala Asn Val Pro Pro Val Pro Gly Asn Ile Leu
 290 295 300

Pro Pro Glu Val Arg Gly Asn Leu Met Ala Ala Gly Gln Asn Leu Gln
 305 310 315 320

Ser Ser Glu Arg Ser Glu Met Ile Ala Thr Trp Ser Pro Ala Val Arg
 325 330 335

Thr Leu Arg Asn Ile Thr Asn Asn Ala Asp Ile Gln Gln Met Asn Arg
 340 345 350

Pro Ser Asn Val Ala His Ile Leu Gln Thr Leu Ser Ala Pro Thr Lys
 355 360 365

Asn Leu Glu Gln Gln Val Asn His Ser Gln Gln Gly His Thr Asn Ala
 370 375 380

Asn Ala Val Leu Phe Ser Gln Val Lys Val Thr Pro Glu Thr His Met
 385 390 395 400

Leu Gln Gln Gln Gln Gln Ala Gln Gln Gln Gln Gln Gln His Pro Val
 405 410 415

Leu His Leu Gln Pro Gln Gln Ile Met Gln Leu Gln Gln Gln Gln Gln
 420 425 430

Gln Gln Ile Ser Gln Gln Pro Tyr Pro Gln Gln Pro Pro His Pro Phe
 435 440 445

Ser Gln Gln Gln Gln Gln Gln Gln Gln Ala His Pro His Gln Phe Ser
 450 455 460

Gln Gln Gln Leu Gln Phe Pro Gln Gln Gln Leu His Pro Pro Gln Gln
 465 470 475 480

Leu His Arg Pro Gln Gln Gln Leu Gln Pro Phe Gln Gln Gln His Ala
 485 490 495

Leu Gln Gln Gln Phe His Gln Leu Gln Gln His Gln Leu Gln Gln Gln
 500 505 510

Gln Leu Ala Gln Leu Gln Gln Gln His Ser Leu Leu Gln Gln Gln Gln
 515 520 525

Gln Gln Gln Ile Gln Gln Gln Gln Leu Gln Arg Met His Gln Gln Gln
 530 535 540

Gln Gln Gln Gln Met Gln Ser Gln Thr Ala Pro His Leu Ser Gln Thr
 545 550 555 560

Ser Gln Ala Leu Gln His Gln Val Pro Pro Gln Gln Pro Pro Gln Gln
 565 570 575

Gln Gln Gln Gln Gln Pro Pro Pro Ser Pro Gln Gln His Gln Leu Phe
 580 585 590

Gly His Asp Pro Ala Val Glu Ile Pro Glu Glu Gly Phe Leu Leu Gly
 595 600 605

Cys Val Phe Ala Ile Ala Asp Tyr Pro Glu Gln Met Ser Asp Lys Gln
 610 615 620

Leu Leu Ala Thr Trp Lys Arg Ile Ile Gln Ala His Gly Gly Thr Val
 625 630 635 640

Asp Pro Thr Phe Thr Ser Arg Cys Thr His Leu Leu Cys Glu Ser Gln
 645 650 655

Val Ser Ser Ala Tyr Ala Gln Ala Ile Arg Glu Arg Lys Arg Cys Val
 660 665 670

Thr Ala His Trp Leu Asn Thr Val Leu Lys Lys Lys Lys Met Val Pro
 675 680 685

Pro His Arg Ala Leu His Phe Pro Val Ala Phe Pro Pro Gly Gly Lys
 690 695 700

Pro Cys Ser Gln His Ile Ile Ser Val Thr Gly Phe Val Asp Ser Asp
 705 710 715 720

Arg Asp Asp Leu Lys Leu Met Ala Tyr Leu Ala Gly Ala Lys Tyr Thr
 725 730 735

Gly Tyr Leu Cys Arg Ser Asn Thr Val Leu Ile Cys Lys Glu Pro Thr
 740 745 750

Gly Leu Lys Tyr Glu Lys Ala Lys Glu Trp Arg Ile Pro Cys Val Asn
 755 760 765

Ala Gln Trp Leu Gly Asp Ile Leu Leu Gly Asn Phe Glu Ala Leu Arg
 770 775 780

Gln Ile Gln Tyr Ser Arg Tyr Thr Ala Phe Ser Leu Gln Asp Pro Phe
 785 790 795 800

Ala Pro Thr Gln His Leu Val Leu Asn Leu Leu Asp Ala Trp Arg Val
 805 810 815

Pro Leu Lys Val Ser Ala Glu Leu Leu Met Ser Ile Arg Leu Pro Pro
 820 825 830

Lys Leu Lys Gln Asn Glu Val Ala Asn Val Gln Pro Ser Ser Lys Arg
 835 840 845

Ala Arg Ile Glu Asp Val Pro Pro Pro Thr Lys Lys Leu Thr Pro Glu
 850 855 860

Leu Thr Pro Phe Val Leu Phe Thr Gly Phe Glu Pro Val Gln Val Gln
 865 870 875 880

Gln Tyr Ile Lys Lys Leu Tyr Ile Leu Gly Gly Glu Val Ala Glu Ser

| | | |
|-----------------------------------------------------------------|---------------------------------|------|
| 885 | 890 | 895 |
| Ala Gln Lys Cys Thr His Leu Ile | Ala Ser Lys Val Thr Arg Thr Val | |
| 900 | 905 | 910 |
| Lys Phe Leu Thr Ala Ile Ser Val Val Lys His Ile Val Thr Pro Glu | | |
| 915 | 920 | 925 |
| Trp Leu Glu Glu Cys Phe Arg Cys Gln Lys Phe Ile Asp Glu Gln Asn | | |
| 930 | 935 | 940 |
| Tyr Ile Leu Arg Asp Ala Glu Ala Glu Val Leu Phe Ser Phe Ser Leu | | |
| 945 | 950 | 955 |
| | | 960 |
| Glu Glu Ser Leu Lys Arg Ala His Val Ser Pro Leu Phe Lys Ala Lys | | |
| 965 | 970 | 975 |
| Tyr Phe Tyr Ile Thr Pro Gly Ile Cys Pro Ser Leu Ser Thr Met Lys | | |
| 980 | 985 | 990 |
| Ala Ile Val Glu Cys Ala Gly Gly Lys Val Leu Ser Lys Gln Pro Ser | | |
| 995 | 1000 | 1005 |
| Phe Arg Lys Leu Met Glu His Lys Gln Asn Ser Ser Leu Ser Glu | | |
| 1010 | 1015 | 1020 |
| Ile Ile Leu Ile Ser Cys Glu Asn Asp Leu His Leu Cys Arg Glu | | |
| 1025 | 1030 | 1035 |
| Tyr Phe Ala Arg Gly Ile Asp Val His Asn Ala Glu Phe Val Leu | | |
| 1040 | 1045 | 1050 |
| Thr Gly Val Leu Thr Gln Thr Leu Asp Tyr Glu Ser Tyr Lys Phe | | |
| 1055 | 1060 | 1065 |

Asn

<210> 17
 <211> 2137
 <212> DNA
 <213> Homo sapiens
 <400> 17

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| agcgcagctt cgggagcatg agtgctgcag tgactgcagg gaagctggca cgggcaccgg | 120 |
| ccgaccctgg gaaagccggg gtccccggag ttgcagctcc cggagctccg gcggcggctc | 180 |
| caccggcgaa agagatcccg gaggtcctag tggacccacg cagccggcgg cgctatgtgc | 240 |
| ggggccgctt tttgggcaag ggcggctttg ccaagtgcct cgagatctcg gacgcggaca | 300 |
| ccaaggaggt gttcgcgggc aagattgtgc ctaagtctct gctgctcaag ccgcaccaga | 360 |
| gggagaagat gtccatggaa atatccattc accgcagcct cggccaccag cacgtcgtag | 420 |
| gattccacgg ctttttcgag gacaacgact tcgtgttcgt ggtgttgagg ctctgccgcc | 480 |
| ggaggtctct cctggagctg cacaagagga ggaaagccct gactgagcct gaggcccgat | 540 |
| actacctacg gcaaattgtg cttggctgcc agtacctgca ccgaaaccga gttattcatc | 600 |
| gagacctcaa gctgggcaac cttttcctga atgaagatct ggaggtgaaa ataggggatt | 660 |
| ttggactggc aaccaaagtc gaatatgacg gggagaggaa gaagaccctg tgtgggactc | 720 |
| ctaattacat agctcccgag gtgctgagca agaaagggca cagtttcgag gtggatgtgt | 780 |
| ggtccattgg gtgtatcatg tataccttgt tagtgggcaa accacctttt gagacttctt | 840 |
| gcctaaaaga gacctacctc cggatcaaga agaatgaata cagtattccc aagcacatca | 900 |
| accccgtagc cgccctccctc atccagaaga tgcttcagac agatcccact gcccgcccaa | 960 |
| ccattaacga gctgcttaat gacgagttct ttacttctgg ctatatccct gcccgctctc | 1020 |
| ccatcacctg cctgaccatt ccaccaaggt tttcgattgc tcccagcagc ctggacccca | 1080 |
| gcaaccggaa gccctcaca gtccctcaata aaggcttgga gaacccctg cctgagcgtc | 1140 |
| cccgggaaaa agaagaacca gtggttcgag agacagggtga ggtggtcgac tgccacctca | 1200 |
| gtgacatgct gcagcagctg cacagtgtca atgcctccaa gccctcggag cgtgggctgg | 1260 |
| tcaggcaaga ggaggctgag gatcctgcct gcatcccat cttctgggtc agcaagtggg | 1320 |
| tggactattc ggacaagtac ggccctgggt atcagctctg tgataacagc gtgggggtgc | 1380 |
| tcttcaatga ctcaacacgc ctcatcctct acaatgatgg tgacagcctg cagtacatag | 1440 |
| agcgtgacgg cactgagtcc tacctcaccg tgagttccca tcccaactcc ttgatgaaga | 1500 |
| agatcacctc ccttaaatat ttccgcaatt acatgagcga gcacttgctg aaggcagggtg | 1560 |
| ccaacatcac gccgcgcgaa ggtgatgagc tcgcccggct gccctaccta cggacctggt | 1620 |
| tccgcacccg cagegccatc atcctgcacc tcagcaacgg cagcgtgcag atcaacttct | 1680 |
| tccaggatca caccaagctc atcttgtgcc cactgatggc agccgtgacc tacatcgacg | 1740 |

| | |
|--------------------------------------------------------------------|------|
| agaagcggga cttccgcaca taccgcctga gtctcctgga ggagtacggc tgctgcaagg | 1800 |
| agctggccag ccggctccgc tacgcccgc ctatggtgga caagctgctg agctcacgct | 1860 |
| cggccagcaa ccgtctcaag gcctcctaata agctgccctc ccctccggac tggtgccctc | 1920 |
| ctcactccca cctgcatctg gggcccatac tggttggctc ccgcggtgcc atgtctgcag | 1980 |
| tgtgcccccc agccccggtg gctgggcaga gctgcatcat ccttgcaggt gggggttgct | 2040 |
| gtataagtta tttttgtaca tgttcgggtg tgggttctac agccttgtcc ccctccccct | 2100 |
| caacccacc atatgaattg tacagaatat ttctatt | 2137 |

<210> 18
 <211> 2204
 <212> DNA
 <213> Homo sapiens

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| ctgcagtgc tgcaggaag ctggcacggg caccggccga ccctgggaaa gccgggggtcc | 120 |
| ccggagttgc agctcccga gctccggcgg cggtccacc ggcgaaagag atcccggagg | 180 |
| tcctagtga cccacgcagc cggcggcgct atgtgcgggg ccgctttttg ggcaaggcg | 240 |
| gctttgcaa gtgcttcgag atctcggacg cggacaccaa ggaggtgttc gcgggcaaga | 300 |
| ttgtgcctaa gtctctgctg ctcaagccgc accagaggga gaagatgtcc atggaaatat | 360 |
| ccattcaccg cagcctcgcc caccagcacg tcgtaggatt ccacggcttt ttcgaggaca | 420 |
| acgacttcgt gttcgtggtg ttggagctct gccgccggag gtctctcctg gagctgcaca | 480 |
| agaggaggaa agccctgact gagcctgagg cccgatacta cctacggcaa attgtgcttg | 540 |
| gctgccagta cctgcaccga aaccgagtta ttcacgaga cctcaagctg ggcaaccttt | 600 |
| tcctgaatga agatctggag gtgaaaatag gggatttttg actggcaacc aaagtcgaat | 660 |
| atgacgggga gaggaagaag accctgtgtg ggactcctaa ttacatagct cccgaggtgc | 720 |
| tgagcaagaa agggcacagt ttcgaggtgg atgtgtggtc cattgggtgt atcatgtata | 780 |
| ccttgtagt gggcaaacca ccttttgaga cttcttgctt aaaagagacc tacctccgga | 840 |
| tcaagaagaa tgaatacagt attcccagc acatcaaccc cgtggccgcc tccctcatcc | 900 |
| agaagatgct tcagacagat cccactgccc gcccaaccat taacgagctg cttaatgacg | 960 |
| agttctttac ttctggctat atccctgccc gtctcccat cacctgcctg accattccac | 1020 |
| caagggtttc gattgctccc agcagcctgg accccagcaa ccggaagccc ctcacagtcc | 1080 |

| | |
|--------------------------------------------------------------------|------|
| tcaataaagg cttggagaac cccctgctg agcgtccccg ggaaaaagaa gaaccagtgg | 1140 |
| ttcgagagac aggtgaggtg gtcgactgcc acctcagtga catgctgcag cagctgcaca | 1200 |
| gtgtcaatgc ctccaagccc tcggagcgtg ggctggtcag gcaagaggag gctgaggatc | 1260 |
| ctgctgcat ccccatcttc tgggtcagca agtgggtgga ctattcggac aagtacggcc | 1320 |
| ttgggtatca gctctgtgat aacagcgtgg ggggtgctctt caatgactca acacgcctca | 1380 |
| tcctctacaa tgatgggtgac agcctgcagt acatagagcg tgacggcact gagtcctacc | 1440 |
| tcaccgtgag ttcccatccc aactccttga tgaagaagat caccctcctt aaatatattcc | 1500 |
| gcaattacat gagcgagcac ttgctgaagg caggtgccaa catcacgccg cgccaagggtg | 1560 |
| atgagctcgc ccggctgccc tacctacgga cctgggttccg caccgcagc gccatcatcc | 1620 |
| tgcacctcag caacggcagc gtgcagatca acttcttcca ggatcacacc aagctcatct | 1680 |
| tgtgcccact gatggcagcc gtgacctaca tcgacgagaa gcgggacttc cgcacatacc | 1740 |
| gcctgagtct cctggaggag tacggctgct gcaaggagct ggccagccgg ctccgctacg | 1800 |
| cccgactat ggtggacaag ctgctgagct cacgctcggc cagcaaccgt ctcaaggcct | 1860 |
| cctaatagct gccctcccct ccggactggg gccctcctca ctcccacctg catctggggc | 1920 |
| ccatactggg tggctcccgc ggtgccatgt ctgcagtgtg cccccagcc ccggtggctg | 1980 |
| ggcagagctg catcatcctt gcagggtggg gttgctgtgt aagttatatt tgtacatgtt | 2040 |
| cggtgtggg ttctacagcc ttgtccccct cccctcaac cccaccatat gaattgtaca | 2100 |
| gaatatttct attgaattcg gaactgtcct ttcttggct ttatgcacat taaacagatg | 2160 |
| tgaatattca aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa | 2204 |

<210> 19
 <211> 2795
 <212> DNA
 <213> Homo sapiens

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| cggccggctc ggacgtgtga ccgcgcctag ggggtggcag cgggcagtgc ggggcggcaa | 120 |
| ggcgaccatg gagcttttgc ggactatcac ctaccagcca gccgccagca ccaaaatgtg | 180 |
| cgagcaggcg ctgggcaagg gttgcggagc ggactcgaag aagaagcggc cgccgcagcc | 240 |
| ccccgaggaa tcgcagccac ctcagtccca ggcgcaagtg cccccggcgg ccctcacca | 300 |
| ccatcaccac cattcgact cggggccgga gatctcgcgg attatcgtcg accccacgac | 360 |

| | |
|--------------------------------------------------------------------|------|
| tgggaagcgc tactgccggg gcaaagtgct gggaaagggg ggctttgcaa aatgttacga | 420 |
| gatgacagat ttgacaaata acaaagtcta cgccgcaaaa attattcctc acagcagagt | 480 |
| agctaaacct catcaaaggg aaaagattga caaagaaata gagcttcaca gaattcttca | 540 |
| tcataagcat gtagtgcagt tttaccacta cttcgaggac aaagaaaaca tttacattct | 600 |
| cttggaaatac tgcagtagaa ggtcaatggc tcataTTTTg aaagcaagaa aggtgttgac | 660 |
| agagccagaa gttcgatact acctcaggca gatttgtgtc ggactgaaat accttcatga | 720 |
| acaagaaatc ttgcacagag atctcaaact agggaaacttt tttattaatg aagccatgga | 780 |
| actaaaagtt ggggacttcg gtctggcagc caggctagaa cccttggaac acagaaggag | 840 |
| aacgatatgt ggtaccccaa attatctctc tcctgaagtc ctcaacaaac aaggacatgg | 900 |
| ctgtgaatca gacatttggg ccctgggctg tgtaatgtat acaatgttac tagggaggcc | 960 |
| cccatttgaa actacaaatc tcaaagaaac ttataggtgc ataagggaag caaggtatac | 1020 |
| aatgccgtcc tcattgctgg ctctgcca gacttaatt gctagtatgt tgtccaaaaa | 1080 |
| cccagaggat cgtcccagtt tggatgacat cattcgacat gacttttttt tgcagggctt | 1140 |
| cactccggac agactgtctt ctagctgttg tcatacagtt ccagatttcc acttatcaag | 1200 |
| cccagctaag aatttcttta agaaagcagc tgctgctctt tttgggtggca aaaaagacaa | 1260 |
| agcaagatat attgacacac ataatagagt gtctaaagaa gatgaagaca tctacaagct | 1320 |
| taggcatgat ttgaaaaaga cttcaataac tcagcaacct agcaaacaca ggacagatga | 1380 |
| ggagctccag ccacctacca ccacagttgc caggctctgga acaccgcag tagaaaacaa | 1440 |
| gcagcagatt ggggatgcta ttcggatgat agtcagaggg actcttggca gctgtagcag | 1500 |
| cagcagtga tgccttgaag acagtaccat gggaaagtgt gcagacacag tggcaagggt | 1560 |
| tcttcgggga tgtctggaaa acatgccgga agctgattgc attcccaaag agcagctgag | 1620 |
| cacatcattt cagtgggtca ccaaattggg tgattactct aacaaatatg gctttgggta | 1680 |
| ccagctctca gaccacaccg tcggtgtcct tttcaacaat ggtgctcaca tgagcctcct | 1740 |
| tccagacaaa aaaacagttc actattacgc agagcttggc caatgctcag ttttccagc | 1800 |
| aacagatgct cctgagcaat ttattagtca agtgacgggtg ctgaaatact tttctcatta | 1860 |
| catggaggag aacctcatgg atggtgagga tctgcctagt gttactgata ttcgaagacc | 1920 |
| tcggctctac ctcttcagt ggctaaaatc tgataaggcc ctaatgatgc tctttaatga | 1980 |
| tggcaccttt cagggtgaatt tctaccatga tcatacaaaa atcatcatct gtagccaaaa | 2040 |

| | |
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| tgaagaatac cttctcacct acatcaatga ggataggata tctacaactt tcaggctgac | 2100 |
| aactctgctg atgtctggct gttcatcaga attaaaaaat cgaatggaat atgccctgaa | 2160 |
| catgctctta caaagatgta actgaaagac ttttcgaatg gaccctatgg gactcctctt | 2220 |
| ttccactgtg agatctacag ggaagccaaa agaattgatct agagtatggt gaagaagatg | 2280 |
| gacatgtggt ggtacgaaaa caattcccct gtggcctgct ggactgggtg gaaccagaac | 2340 |
| aggctaaggc atacagttct tgacttttga caatccaaga gtgaaccaga atgcagtttt | 2400 |
| ccttgagata cctgttttaa aagggtttttc agacaatttt gcagaaagggt gcattgattc | 2460 |
| ttaaattctc tctgttgaga gcatttcagc cagaggactt tggaactgtg aatatacttc | 2520 |
| ctgaagggga gggagaaggg aggaagctcc catgttgttt aaaggctgta attggagcag | 2580 |
| cttttggtg cgtaactgtg aactatggcc atatataatt ttttttcatt aatttttgaa | 2640 |
| gatacttggt gctggaaaag tgcattcctt gttaataaac tttttattta ttacagccca | 2700 |
| aagagcagta tttattatca aaatgtcttt ttttttatgt tgaccatttt aaaccgttgg | 2760 |
| caataaagag tatgaaaacg cagaaaaaaaa aaaaa | 2795 |

<210> 20
 <211> 2369
 <212> DNA
 <213> Homo sapiens

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| cctgtctccg cgcccccttc agcgtgcggc cgccgcgccc gctcccccg gggggccgg | 180 |
| gccgcctccg agtgccttgc gcggacctga gctggagatg ctggccgggc taccgacgtc | 240 |
| agaccccg ggcctcatca cggacccgcg cagcggccgc acctacctca aaggccgctt | 300 |
| gttgggcaag gggggcttcg cccgctgcta cgaggccact gacacagaga ctggcagcgc | 360 |
| ctacgctgtc aaagtcattc cgcagagccg cgtcgccaag ccgcatcagc gcgagaagat | 420 |
| cctaaatgag attgagctgc accgagacct gcagcaccgc cacatcgtgc gtttttcgca | 480 |
| ccactttgag gacgctgaca acatctacat tttcttgag ctctgcagcc gaaagtcctt | 540 |
| ggccacatc tggaaggccc ggcacacctt gttggagcca gaagtgcgct actacctgcg | 600 |
| gcagatcctt tctggcctca agtacttgca ccagcgcggc atcttgacc gggacctcaa | 660 |
| gttgggaaat tttttcatca ctgagaacat ggaactgaag gtgggggatt ttgggctggc | 720 |

| | |
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| ggctccagaa gtgctgctga gacagggcca cggccctgag gcggatgtat ggtcactggg | 840 |
| ctgtgtcatg tacacgctgc tctgcgggag ccctcccttt gagacggctg acctgaagga | 900 |
| gacgtaccgc tgcacgaagc aggttcacta cacgctgcct gccagcctct cactgcctgc | 960 |
| ccggcagctc ctggccgcca tccttcgggc ctcaccccgga gaccgcccct ctattgacca | 1020 |
| gatcctgcgc catgacttct ttaccaaggg ctacaccccc gatcgactcc ctatcagcag | 1080 |
| ctgcgtgaca gtcccagacc tgacaccccc caaccagct aggagtctgt ttgccaaagt | 1140 |
| taccaagagc ctctttggca gaaagaagaa gagtaagaat catgccagg agagggatga | 1200 |
| ggtctccggt ttggtgagcg gcctcatgcg cacatccgtt ggccatcagg atgccaggcc | 1260 |
| agaggctcca gcagcttctg gccagcccc tgtcagcctg gtagagacag cacctgaaga | 1320 |
| cagctcacc cgtgggacac tggcaagcag tggagatgga tttgaagaag gtctgactgt | 1380 |
| ggccacagta gtggagtcag ccctttgtgc tctgagaaat tgtatagcct tcatgcccc | 1440 |
| agcggaacag aaccgggcc ccctggcca gccagagcct ctggtgtggg tcagcaagt | 1500 |
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| agatctgcc agtgtggaag aggtagaggt acctgctccg cccttgctgc tgcagtgggt | 1800 |
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| cggggaccac accaagctga ttctcagtgg ctgggagccc ctcttgctga cttttgtggc | 1920 |
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| agacctgcgg cagcgactcc gctatgctct gcgcctgctc cgggaccgca gccagccta | 2040 |
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| ggaccagctt tactggagtt gggggcggct tgtcttcgct ggctcctacc ccatctccaa | 2220 |
| gataagcctg agccttagct ccagctagg gggcgttatt tatggaccac ttttatttat | 2280 |
| tgtcagacac ttattttatt ggatgtgagc ccagggggg cctcctccta ggataataaa | 2340 |
| caattttgca gaattggaaa aaaaaaaaa | 2369 |

<210> 21
 <211> 2381
 <212> DNA
 <213> *Xenopus laevis*

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| | |
|--------------------------------------------------------------------|------|
| taaccaaaaa gatcacactg ctgaagtact tcagaaacta catgagtgag cacctattga | 1620 |
| aggccggtgc caacacgact cctcgggagg gtgatgaact ggctcgtctc cccttcttgc | 1680 |
| gcacctgggt ccggaacgc agtgccatta tccttcacct gagcaatgga actgttcaga | 1740 |
| tcaacttctt ccaggatcac accaagataa tcctgtgccc ccttatggct gcggtgtcct | 1800 |
| acatagatga aaagcgtgag ttccgcacgt acaagctgag cctgattcaa gaatttggct | 1860 |
| gctgcaaaga gctcgcaagc cgtctccggt acgcacgcac aatgggtggag aaacttcaga | 1920 |
| gctcaaagtc agccgttgca cacgtaaagg cctcggcata gccggccaag caaactatgg | 1980 |
| actccccaga aacaaaccca tattcttggg tttctggaag cacaagacct tgtttcaagt | 2040 |
| cctaggagca cccgtctttt taattttaag ccgaagctga catgttctag ggtgagatgg | 2100 |
| ttcgttaagc ttgccaagac tgtacagtac tcgcgtgacg tttccataaa aatatatctt | 2160 |
| aagtgccact cgttgcgctt gggtaatcat ggatatgtga tgtagatacc tgctgggctc | 2220 |
| tgtatgaacc tgtgtcctcc tgtttttctc tgtcaacggt gtctgggttt taatgtaaaa | 2280 |
| atataatctt taatactttt gtatattatc agattaaagt tctttgtata gccgtggaaa | 2340 |
| aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaactcga g | 2381 |

<210> 22
 <211> 2379
 <212> DNA
 <213> *Drosophila melanogaster*

| | |
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| atcgaacggt ttccggcgtt tctccgcttt gtgcttggtt ttcgtgcatt cgatgggcaa | 120 |
| aaccgagatt tgatcgccgc ttctcttgtc aaccgtgtgg atctgatctc cgtttccgag | 180 |
| gcactttcag ccgatcgccg gtggaattat aggctcagaa cgaggagtat gcccgcaaaa | 240 |
| ctccaggcga acgcaaacgc aaaaggggca gtccgtagta aagaagaaa gagagcaaga | 300 |
| tggccgcgaa gcccgaggat aagagcacgg atattccgga tcgcctcgtc gacatcaacc | 360 |
| agcggaaaac ctacaagcgc atgcggttct tcggcaaggg cgggtttgca aaatgttacg | 420 |
| agatcatcga tgtggaaacc gacgacgtct tcgccggcaa gatcgtatcc aagaagctga | 480 |
| tgatcaaaca caatcagaag gagaagaccg cccaggagat aactattcac cgcagcctta | 540 |
| accatccgaa cattgtcaag tttcacaact actttgaaga ttcgcagaat atctacattg | 600 |
| tgctggagct gtgcaagaaa agatccatga tggagctgca caaacgtagg aaaagcatta | 660 |

| | |
|---------------------------------------------------------------------|------|
| cggagttcga atgccgctac tacatthacc agataatcca gggcggttaag tacttgacacg | 720 |
| ataaccgcat tatccatcga gatctgaagc tgggcaatct cttcctcaac gatttggtgc | 780 |
| acgtgaagat cggggatttc ggggtggcca cgcgcattga gtatgagggc gagcgaaaaa | 840 |
| agaccttatg cggaacgccc aactatatag ccccgagat cctcaccaag aagggccact | 900 |
| ccttcgaggt ggacatctgg tgcattggct gcgtcatgta cacactgctt gtgggcccagc | 960 |
| cggcggtcga aaccaagact ctgaaggata cgtactcgaa aatcaagaag tgcgagtacc | 1020 |
| gcgtgcccag ctacttaagg aaaccggcgg cgatatggt catcgccatg ctgcagccaa | 1080 |
| atccggagag ccgcccggca attggctcagc tgctgaactt tgagttcctc aagggctcaa | 1140 |
| aggtgcccac gttcttgccc agctcttgct tgacaatggc gccgcgtatc ggcagcaacg | 1200 |
| acaccatcga ggattcgatg caccgcaagc cactgatgga gatgaacggc atcaggccccg | 1260 |
| acgacactcg tctggagtcg accttcctca aggccaatct gcacgacgcc attaccgcgt | 1320 |
| cagcgcaggt gtgccgccac agcagaggact atcgcagcga tatcgagagc ctgtaccagc | 1380 |
| agctcactaa tcttatcaac ggaaagccgc gaattctgca aggcaatctg ggcgacgaga | 1440 |
| acacagatcc tgcagcgcag ccgctcttct ggatatccaa gtggggttgac tacagcgaca | 1500 |
| agtacggatt tggttaccag ctgtgcgatg agggcatcgg cgtgatgttc aacgacacca | 1560 |
| caaagctgat cctgctgccg aatcagatca acgtacactt catcgacaag gatggcaagg | 1620 |
| agacgtacat gaccaccacg gattactgca agtcgcttga caagaagatg aagctgctgt | 1680 |
| cgtactttaa gcgctacatg atcgagcacc tggatgaaggc aggtgccaac aatgtgaaca | 1740 |
| ttgagagcga tcaaatctcg cgtatgcccc atttactctc ctgggtccgt acaacatgtg | 1800 |
| ccgtagttat gcatttgacc aacggttctg tgcagctaaa cttctcagat cacatgaagc | 1860 |
| tcacccctctg cccgcgcgatg agtgctataa cctatatgga ccaggagaag aacttccgca | 1920 |
| cctaccgatt ttcgaccatt gtggagaacg gcgtgtctaa agacttgtag cagaagatcc | 1980 |
| gatatgcccga ggagaaactt aggaaaatgc tggagaagat gttcacataa gcgtagccag | 2040 |
| cccaactatc attataaggc cgaatgtag tttaacgtaa ttcacgaatg ccctggccaa | 2100 |
| cttcatttat agcccagaaa gtatccctcct ctcccatcat cttttaaaat tgtagttccc | 2160 |
| gttcaaattg atttgttcga tgtttataga atttatgtgt ttttgccctc tcccttcat | 2220 |
| atcgaaaata ctgcttaagt tatattcatc gtcagtgttg ggctccctc aaaagtaatt | 2280 |
| taatatatct gtttaatggg tttcgtagac gatccgatca cttaatgcat tttaaagaga | 2340 |

tcaaattaaa tgtttaaact aaaaaaaaaa aaaaaaaaaa

2379

<210> 23

<211> 2629

<212> DNA

<213> *Drosophila melanogaster*

<400> 23

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| taaaaaatcg aacgggtttcg gcgcgtttct cgctttgtgc ttggttttcg tgcattcgat | 120 |
| gggcaaaacc gagatttgat cgccgcttct cttgtcaacc gtgtggatct gatctccgtt | 180 |
| tccgaggcac tttcagccga tcgccggtgg aattataggc tcagaacgag gagtatcgcc | 240 |
| gcaaaactcc aggcgaacgc aaacgcaaaa ggggcagtcc gtagtaaaga agaaaggaga | 300 |
| gcaagatggc cgccaagccc gaggataaga gcacggatat tccggatcgc ctcgctcgaca | 360 |
| tcaaccagcg gaaaacctac aagcgcattgc ggttcttcgg caagggcggg tttgcaaaat | 420 |
| gttacgagat catcgatgtg gaaaccgacg acgtcttcgc cggcaagatc gtatccaaga | 480 |
| agctgatgat caaacacaat cagaaggaga agaccgccc ggagataact attcaccgca | 540 |
| gccttaacca tccgaacatt gtcaagtttc acaactactt tgaagattcg cagaatatct | 600 |
| acattgtgct ggagctgtgc aagaaaagat ccatgatgga gctgcacaaa cgtaggaaaa | 660 |
| gcattacgga gttcgaatgc cgctactaca tttaccagat aatccagggc gttaagtact | 720 |
| tgcacgataa ccgcattatc catcgagatc tgaagctggg caatctcttc ctcaacgatt | 780 |
| tggtgcacgt gaagatcggg gatttcgggt tggccacgcg cattgagtat gagggcgagc | 840 |
| gaaaaaagac cttatgcgga acgcccact atatagcccc ggagatcctc accaagaagg | 900 |
| gccactcctt cgaggtggac atctggctga ttggctgcgt catgtacaca ctgcttgtgg | 960 |
| gccagccgcc gttcgaaacc aagactctga aggatacgta ctcgaaaatc aagaagtgcg | 1020 |
| agtaccgctg gccagctac ttaaggaaac cggcgggcga tatgggtcatc gccatgctgc | 1080 |
| agccaaatcc ggagagccgc ccggcaattg gtcagctgct gaactttgag ttcctcaagg | 1140 |
| gctcaaaggt gcccatgttc ttgccagct cttgtctgac aatggcgccg cgtatcggca | 1200 |
| gcaacgacac catcgaggat togatgcacc gcaagccact gatggagatg aacggcatca | 1260 |
| ggcccgacga cactcgtctg gagtcgacct tcctcaaggc caatctgcac gacgccatta | 1320 |
| ccgcgtcagc gcaggtgtgc cgccacagcg aggactatcg cagcgatatc gagagcctgt | 1380 |
| accagcagct cactaatctt atcaacggaa agccgcgaat tctgcaaggc aatctgggcg | 1440 |

acgagaacac agatcctgca ggcagccgc tcttctggat atccaagtgg gttgactaca 1500
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 caatatgtaa atgcttttga actaaaagcg aatatatata aaatttaat 2629

<210> 24
 <211> 603
 <212> PRT
 <213> Homo sapiens

<400> 24

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Pro Gly Lys Ala Gly Val Pro Gly Val Ala Ala Pro Gly Ala Pro Ala
 20 25 30

Ala Ala Pro Pro Ala Lys Glu Ile Pro Glu Val Leu Val Asp Pro Arg

95

His Ile Asn Pro Val Ala Ala Ser Leu Ile Gln Lys Met Leu Gln Thr
 275 280 285

Asp Pro Thr Ala Arg Pro Thr Ile Asn Glu Leu Leu Asn Asp Glu Phe
 290 295 300

Phe Thr Ser Gly Tyr Ile Pro Ala Arg Leu Pro Ile Thr Cys Leu Thr
 305 310 315 320

Ile Pro Pro Arg Phe Ser Ile Ala Pro Ser Ser Leu Asp Pro Ser Asn
 325 330 335

Arg Lys Pro Leu Thr Val Leu Asn Lys Gly Leu Glu Asn Pro Leu Pro
 340 345 350

Glu Arg Pro Arg Glu Lys Glu Glu Pro Val Val Arg Glu Thr Gly Glu
 355 360 365

Val Val Asp Cys His Leu Ser Asp Met Leu Gln Gln Leu His Ser Val
 370 375 380

Asn Ala Ser Lys Pro Ser Glu Arg Gly Leu Val Arg Gln Glu Glu Ala
 385 390 395 400

Glu Asp Pro Ala Cys Ile Pro Ile Phe Trp Val Ser Lys Trp Val Asp
 405 410 415

Tyr Ser Asp Lys Tyr Gly Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val
 420 425 430

Gly Val Leu Phe Asn Asp Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly
 435 440 445

Asp Ser Leu Gln Tyr Ile Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr
 450 455 460

Val Ser Ser His Pro Asn Ser Leu Met Lys Lys Ile Thr Leu Leu Lys
 465 470 475 480

Tyr Phe Arg Asn Tyr Met Ser Glu His Leu Leu Lys Ala Gly Ala Asn
 485 490 495

Ile Thr Pro Arg Glu Gly Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg
500 505 510

Thr Trp Phe Arg Thr Arg Ser Ala Ile Ile Leu His Leu Ser Asn Gly
515 520 525

Ser Val Gln Ile Asn Phe Phe Gln Asp His Thr Lys Leu Ile Leu Cys
530 535 540

Pro Leu Met Ala Ala Val Thr Tyr Ile Asp Glu Lys Arg Asp Phe Arg
545 550 555 560

Thr Tyr Arg Leu Ser Leu Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu
565 570 575

Ala Ser Arg Leu Arg Tyr Ala Arg Thr Met Val Asp Lys Leu Leu Ser
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Ser Arg Ser Ala Ser Asn Arg Leu Lys Ala Ser
595 600

<210> 25
<211> 603
<212> PRT
<213> Mus musculus

<400> 25

Met Asn Ala Ala Ala Lys Ala Gly Lys Leu Ala Arg Ala Pro Ala Asp
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Leu Gly Lys Gly Gly Val Pro Gly Asp Ala Val Pro Gly Ala Pro Val
20 25 30

Ala Ala Pro Leu Ala Lys Glu Ile Pro Glu Val Leu Val Asp Pro Arg
35 40 45

Ser Arg Arg Gln Tyr Val Arg Gly Arg Phe Leu Gly Lys Gly Gly Phe
50 55 60

Ala Lys Cys Phe Glu Ile Ser Asp Ala Asp Thr Lys Glu Val Phe Ala
65 70 75 80

Gly Lys Ile Val Pro Lys Ser Leu Leu Leu Lys Pro His Gln Lys Glu

| 85 | | | | | 90 | | | | | 95 | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Met | Ser | Met | Glu | Ile | Ser | Ile | His | Arg | Ser | Leu | Ala | His | Gln | His |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Val | Val | Gly | Phe | His | Asp | Phe | Phe | Glu | Asp | Ser | Asp | Phe | Val | Phe | Val |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Val | Leu | Glu | Leu | Cys | Arg | Arg | Arg | Ser | Leu | Leu | Glu | Leu | His | Lys | Arg |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Arg | Lys | Ala | Leu | Thr | Glu | Pro | Glu | Ala | Arg | Tyr | Tyr | Leu | Arg | Gln | Ile |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Val | Leu | Gly | Cys | Gln | Tyr | Leu | His | Arg | Asn | Gln | Val | Ile | His | Arg | Asp |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Leu | Lys | Leu | Gly | Asn | Leu | Phe | Leu | Asn | Glu | Asp | Leu | Glu | Val | Lys | Ile |
| | | 180 | | | | | | 185 | | | | | 190 | | |
| Gly | Asp | Phe | Gly | Leu | Ala | Thr | Lys | Val | Glu | Tyr | Glu | Gly | Glu | Arg | Lys |
| | 195 | | | | | | 200 | | | | | 205 | | | |
| Lys | Thr | Leu | Cys | Gly | Thr | Pro | Asn | Tyr | Ile | Ala | Pro | Glu | Val | Leu | Ser |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Lys | Lys | Gly | His | Ser | Phe | Glu | Val | Asp | Val | Trp | Ser | Ile | Gly | Cys | Ile |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Met | Tyr | Thr | Leu | Leu | Val | Gly | Lys | Pro | Pro | Phe | Glu | Thr | Ser | Cys | Leu |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Lys | Glu | Thr | Tyr | Leu | Arg | Ile | Lys | Lys | Asn | Glu | Tyr | Ser | Ile | Pro | Lys |
| | | 260 | | | | | | 265 | | | | | 270 | | |
| His | Ile | Asn | Pro | Val | Ala | Ala | Ser | Leu | Ile | Gln | Lys | Met | Leu | Gln | Thr |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Asp | Pro | Thr | Ala | Arg | Pro | Thr | Ile | His | Glu | Leu | Leu | Asn | Asp | Glu | Phe |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Phe | Thr | Ser | Gly | Tyr | Ile | Pro | Ala | Arg | Leu | Pro | Ile | Thr | Cys | Leu | Thr |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |

Ile Pro Pro Arg Phe Ser Ile Ala Pro Ser Ser Leu Asp Pro Ser Ser
 325 330 335

Arg Lys Pro Leu Lys Val Leu Asn Lys Gly Val Glu Asn Pro Leu Pro
 340 345 350

Asp Arg Pro Arg Glu Lys Glu Glu Pro Val Val Arg Glu Thr Asn Glu
 355 360 365

Ala Ile Glu Cys His Leu Ser Asp Leu Leu Gln Gln Leu Thr Ser Val
 370 375 380

Asn Ala Ser Lys Pro Ser Glu Arg Gly Leu Val Arg Gln Glu Glu Ala
 385 390 395 400

Glu Asp Pro Ala Cys Ile Pro Ile Phe Trp Val Ser Lys Trp Val Asp
 405 410 415

Tyr Ser Asp Lys Tyr Gly Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val
 420 425 430

Gly Val Leu Phe Asn Asp Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly
 435 440 445

Asp Ser Leu Gln Tyr Ile Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr
 450 455 460

Val Ser Ser His Pro Asn Ser Leu Met Lys Lys Ile Thr Leu Leu Asn
 465 470 475 480

Tyr Phe Arg Asn Tyr Met Ser Glu His Leu Leu Lys Ala Gly Ala Asn
 485 490 495

Ile Thr Pro Arg Glu Gly Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg
 500 505 510

Thr Trp Phe Arg Thr Arg Ser Ala Ile Ile Leu His Leu Ser Asn Gly
 515 520 525

Thr Val Gln Ile Asn Phe Phe Gln Asp His Thr Lys Leu Ile Leu Cys
 530 535 540

Pro Leu Met Ala Ala Val Thr Tyr Ile Asn Glu Lys Arg Asp Phe Gln
 545 550 555 560

Thr Tyr Arg Leu Ser Leu Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu
 565 570 575

Ala Ser Arg Leu Arg Tyr Ala Arg Thr Met Val Asp Lys Leu Leu Ser
 580 585 590

Ser Arg Ser Ala Ser Asn Arg Leu Lys Ala Ser
 595 600

<210> 26
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 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> MISC_FEATURE
 <222> (3)..(6)
 <223> Xaa = any amino acid except Cys

<220>
 <221> MOD_RES
 <222> (7)..(7)
 <223> PHOSPHORYLATION

<220>
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 <223> Xaa = any amino acid except Cys

<400> 26

Met Ala Xaa Xaa Xaa Xaa Thr Pro Xaa Xaa Xaa Xaa Ala Lys Lys
 1 5 10 15

<210> 27
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
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<220>

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 <223> Xaa = any amino acid except Cys

<220>
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 <223> PHOSPHORYLATION

<220>
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 <223> Xaa = any amino acid except Cys

<400> 27

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Xaa | Xaa | Xaa | Xaa | Ser | Pro | Xaa | Xaa | Xaa | Xaa | Ala | Lys | Lys |
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<210> 28
 <211> 15
 <212> PRT
 <213> Artificial Sequence

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 <223> synthetic

<220>
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 <223> Xaa = any amino acid except Cys

<220>
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 <223> PHOSPHORYLATION

<220>
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 <223> Xaa = any amino acid except Cys

<400> 28

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Xaa | Xaa | Xaa | Xaa | Ser | Thr | Xaa | Xaa | Xaa | Xaa | Ala | Lys | Lys |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 29
 <211> 15
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 <223> PHOSPHORYLATION

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 <223> Xaa = any amino acid except Cys

<400> 29

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Xaa | Xaa | Xaa | Xaa | Ser | Ser | Xaa | Xaa | Xaa | Xaa | Ala | Lys | Lys |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 30
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<220>
 <221> MOD_RES
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 <223> Biotin-X

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Xaa is aminohexanoic acid

<220>
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 <223> Xaa is aminohexanoic acid

<220>
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 <222> (7)..(8)
 <223> Xaa is any amino acid except Cys

<220>
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 <222> (9)..(9)
 <223> Xaa is a biased mixture of Pro, Leu, Ile, Val, Phe, Met, or Trp

<220>
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 <223> Xaa is any amino acid except Cys

<220>
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 <222> (11)..(11)
 <223> Phosphorylated

<220>
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 <223> Xaa is any amino acid except Cys

<400> 30

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Thr Pro Xaa Xaa Xaa Xaa
 1 5 10 15

Ala Lys Lys Lys
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<210> 31
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
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<220>
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<220>
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 <223> Biotin-X

<220>
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 <223> X is aminohexanoic acid

<220>
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 <222> (7)..(8)
 <223> X is any amino acid except for Cys

<220>
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 <222> (9)..(9)

<223> X is a biased mixture of Phe, Leu, Ile, Val, Phe, Met, or Trp

<220>
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 <222> (10)..(10)
 <223> X is any amino acid except for Cys

<220>
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 <222> (13)..(16)
 <223> X is any amino acid except for Cys

<400> 31

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Thr Pro Xaa Xaa Xaa Xaa
 1 5 10 15

Ala Lys Lys Lys
 20

<210> 32
 <211> 20
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<220>
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<220>
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<220>
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<220>
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<220>
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 <223> PHOSPHORYLATION

<220>

<221> MISC_FEATURE
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<223> Xaa is any amino acid except Cys

<400> 32

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Thr Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Ala Lys Lys Lys
20

<210> 33
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Biotin-X

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa is aminohexanoic acid

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa is aminohexanoic acid

<220>
<221> MISC_FEATURE
<222> (7)..(10)
<223> Xaa is any amino acid except Cys

<220>
<221> MISC_FEATURE
<222> (12)..(16)
<223> Xaa is any amino acid except Cys

<400> 33

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Thr Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Ala Lys Lys Lys
20

<210> 34
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<400> 34

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Gly | Pro | Met | Gln | Ser | Thr | Pro | Leu | Asn | Gly | Ala | Lys | Lys |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 35
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Biotin-X

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Xaa = aminohexanoic acid

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa = aminohexanoic acid

<220>
 <221> MISC_FEATURE
 <222> (7)..(9)
 <223> Xaa is any amino acid except Cys

<220>
 <221> MISC_FEATURE
 <222> (10)..(10)
 <223> Xaa is a biased mixture of Ala, Ile, Leu, Met, Asn, Pro, Ser, Thr, or Val

<220>
 <221> MISC_FEATURE
 <222> (11)..(11)
 <223> Xaa is phosphorylated Ser or phosphorylated Thr

<220>
 <221> MISC_FEATURE

<222> (13)..(13)
 <223> Xaa is biased mixture of 25% Glu and 75% any amino acid except
 Arg, Cys, His, or Lys

<220>
 <221> MISC_FEATURE
 <222> (14)..(16)
 <223> Xaa is any amino acid except Cys

<400> 35

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa
 1 5 10 15

Ala Lys Lys Lys
 20

<210> 36
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Biotin - X

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Xaa is aminohexanoic acid

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa is aminohexanoic acid

<220>
 <221> MISC_FEATURE
 <222> (7)..(10)
 <223> Xaa is any amino acid except for Cys

<220>
 <221> MOD_RES
 <222> (11)..(11)
 <223> Phosphorylated Ser

<220>
 <221> MISC_FEATURE
 <222> (12)..(16)
 <223> Xaa is any amino acid except for Cys

<400> 36

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Ser Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Ala Lys Lys Lys
20

<210> 37

<211> 2089

<212> PRT

<213> Homo sapiens

<400> 37

Met Glu Asp Thr Gln Ala Ile Asp Trp Asp Val Glu Glu Glu Glu Glu
1 5 10 15

Thr Glu Gln Ser Ser Glu Ser Leu Arg Cys Asn Val Glu Pro Val Gly
20 25 30

Arg Leu His Ile Phe Ser Gly Ala His Gly Pro Glu Lys Asp Phe Pro
35 40 45

Leu His Leu Gly Lys Asn Val Val Gly Arg Met Pro Asp Cys Ser Val
50 55 60

Ala Leu Pro Phe Pro Ser Ile Ser Lys Gln His Ala Glu Ile Glu Ile
65 70 75 80

Leu Ala Trp Asp Lys Ala Pro Ile Leu Arg Asp Cys Gly Ser Leu Asn
85 90 95

Gly Thr Gln Ile Leu Arg Pro Pro Lys Val Leu Ser Pro Gly Val Ser
100 105 110

His Arg Leu Arg Asp Gln Glu Leu Ile Leu Phe Ala Asp Leu Leu Cys
115 120 125

Gln Tyr His Arg Leu Asp Val Ser Leu Pro Phe Val Ser Arg Gly Pro
130 135 140

Leu Thr Val Glu Glu Thr Pro Arg Val Gln Gly Glu Thr Gln Pro Gln
145 150 155 160

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Leu | Leu | Leu | Ala | Glu | Asp | Ser | Glu | Glu | Glu | Val | Asp | Phe | Leu | Ser | 165 | 170 | 175 |
| Glu | Arg | Arg | Met | Val | Lys | Lys | Ser | Arg | Thr | Thr | Ser | Ser | Ser | Val | Ile | 180 | 185 | 190 |
| Val | Pro | Glu | Ser | Asp | Glu | Glu | Gly | His | Ser | Pro | Val | Leu | Gly | Gly | Leu | 195 | 200 | 205 |
| Gly | Pro | Pro | Phe | Ala | Phe | Asn | Leu | Asn | Ser | Asp | Thr | Asp | Val | Glu | Glu | 210 | 215 | 220 |
| Gly | Gln | Gln | Pro | Ala | Thr | Glu | Glu | Ala | Ser | Ser | Ala | Ala | Arg | Arg | Gly | 225 | 230 | 235 |
| Ala | Thr | Val | Glu | Ala | Lys | Gln | Ser | Glu | Ala | Glu | Val | Val | Thr | Glu | Ile | 245 | 250 | 255 |
| Gln | Leu | Glu | Lys | Asp | Gln | Pro | Leu | Val | Lys | Glu | Arg | Asp | Asn | Asp | Thr | 260 | 265 | 270 |
| Lys | Val | Lys | Arg | Gly | Ala | Gly | Asn | Gly | Val | Val | Pro | Ala | Gly | Val | Ile | 275 | 280 | 285 |
| Leu | Glu | Arg | Ser | Gln | Pro | Pro | Gly | Glu | Asp | Ser | Asp | Thr | Asp | Val | Asp | 290 | 295 | 300 |
| Asp | Asp | Ser | Arg | Pro | Pro | Gly | Arg | Pro | Ala | Glu | Val | His | Leu | Glu | Arg | 305 | 310 | 315 |
| Ala | Gln | Pro | Phe | Gly | Phe | Ile | Asp | Ser | Asp | Thr | Asp | Ala | Glu | Glu | Glu | 325 | 330 | 335 |
| Arg | Ile | Pro | Ala | Thr | Pro | Val | Val | Ile | Pro | Met | Lys | Lys | Arg | Lys | Ile | 340 | 345 | 350 |
| Phe | His | Gly | Val | Gly | Thr | Arg | Gly | Pro | Gly | Ala | Pro | Gly | Leu | Ala | His | 355 | 360 | 365 |
| Leu | Gln | Glu | Ser | Gln | Ala | Gly | Ser | Asp | Thr | Asp | Val | Glu | Glu | Gly | Lys | 370 | 375 | 380 |

Ala Pro Gln Ala Val Pro Leu Glu Lys Ser Gln Ala Ser Met Val Ile
 385 390 395 400
 Asn Ser Asp Thr Asp Asp Glu Glu Glu Val Ser Ala Ala Leu Thr Leu
 405 410 415
 Ala His Leu Lys Glu Ser Gln Pro Ala Ile Trp Asn Arg Asp Ala Glu
 420 425 430
 Glu Asp Met Pro Gln Arg Val Val Leu Leu Gln Arg Ser Gln Thr Thr
 435 440 445
 Thr Glu Arg Asp Ser Asp Thr Asp Val Glu Glu Glu Glu Leu Pro Val
 450 455 460
 Glu Asn Arg Glu Ala Val Leu Lys Asp His Thr Lys Ile Arg Ala Leu
 465 470 475 480
 Val Arg Ala His Ser Glu Lys Asp Gln Pro Pro Phe Gly Asp Ser Asp
 485 490 495
 Asp Ser Val Glu Ala Asp Lys Ser Ser Pro Gly Ile His Leu Glu Arg
 500 505 510
 Ser Gln Ala Ser Thr Thr Val Asp Ile Asn Thr Gln Val Glu Lys Glu
 515 520 525
 Val Pro Pro Gly Ser Ala Ile Met His Ile Lys Lys His Gln Val Ser
 530 535 540
 Val Glu Gly Thr Asn Gln Thr Asp Val Lys Ala Val Gly Gly Pro Ala
 545 550 555 560
 Lys Leu Leu Val Val Ser Leu Glu Glu Ala Trp Pro Leu His Gly Asp
 565 570 575
 Cys Glu Thr Asp Ala Glu Glu Gly Thr Ser Leu Thr Ala Ser Val Val
 580 585 590
 Ala Asp Val Arg Lys Ser Gln Leu Pro Ala Glu Gly Asp Ala Gly Ala
 595 600 605
 Glu Trp Ala Ala Ala Val Leu Lys Gln Glu Arg Ala His Glu Val Gly

| | | |
|-----------------------------------------------------------------|-----|---------|
| 610 | 615 | 620 |
| Ala Gln Gly Gly Pro Pro Val Ala Gln Val Glu Gln Asp Leu Pro Ile | | |
| 625 | 630 | 635 640 |
| Ser Arg Glu Asn Leu Thr Asp Leu Val Val Asp Thr Asp Thr Leu Gly | | |
| | 645 | 650 655 |
| Glu Ser Thr Gln Pro Gln Arg Glu Gly Ala Gln Val Pro Thr Gly Arg | | |
| | 660 | 665 670 |
| Glu Arg Glu Gln His Val Gly Gly Thr Lys Asp Ser Glu Asp Asn Tyr | | |
| | 675 | 680 685 |
| Gly Asp Ser Glu Asp Leu Asp Leu Gln Ala Thr Gln Cys Phe Leu Glu | | |
| | 690 | 695 700 |
| Asn Gln Gly Leu Glu Ala Val Gln Ser Met Glu Asp Glu Pro Thr Gln | | |
| 705 | 710 | 715 720 |
| Ala Phe Met Leu Thr Pro Pro Gln Glu Leu Gly Pro Ser His Cys Ser | | |
| | 725 | 730 735 |
| Phe Gln Thr Thr Gly Thr Leu Asp Glu Pro Trp Glu Val Leu Ala Thr | | |
| | 740 | 745 750 |
| Gln Pro Phe Cys Leu Arg Glu Ser Glu Asp Ser Glu Thr Gln Pro Phe | | |
| | 755 | 760 765 |
| Asp Thr His Leu Glu Ala Tyr Gly Pro Cys Leu Ser Pro Pro Arg Ala | | |
| | 770 | 775 780 |
| Ile Pro Gly Asp Gln His Pro Glu Ser Pro Val His Thr Glu Pro Met | | |
| 785 | 790 | 795 800 |
| Gly Ile Gln Gly Arg Gly Arg Gln Thr Val Asp Lys Val Met Gly Ile | | |
| | 805 | 810 815 |
| Pro Lys Glu Thr Ala Glu Arg Val Gly Pro Glu Arg Gly Pro Leu Glu | | |
| | 820 | 825 830 |
| Arg Glu Thr Glu Lys Leu Leu Pro Glu Arg Gln Thr Asp Val Thr Gly | | |
| | 835 | 840 845 |

Glu Glu Glu Leu Thr Lys Gly Lys Gln Asp Arg Glu Gln Lys Gln Leu
 850 855 860

Leu Ala Arg Asp Thr Gln Arg Gln Glu Ser Asp Lys Asn Gly Glu Ser
 865 870 875 880

Ala Ser Pro Glu Arg Asp Arg Glu Ser Leu Lys Val Glu Ile Glu Thr
 885 890 895

Ser Glu Glu Ile Gln Glu Lys Gln Val Gln Lys Gln Thr Leu Pro Ser
 900 905 910

Lys Ala Phe Glu Arg Glu Val Glu Arg Pro Val Ala Asn Arg Glu Cys
 915 920 925

Asp Pro Ala Glu Leu Glu Glu Lys Val Pro Lys Val Ile Leu Glu Arg
 930 935 940

Asp Thr Gln Arg Gly Glu Pro Glu Gly Gly Ser Gln Asp Gln Lys Gly
 945 950 955 960

Gln Ala Ser Ser Pro Thr Pro Glu Pro Gly Val Gly Ala Gly Asp Leu
 965 970 975

Pro Gly Pro Thr Ser Ala Pro Val Pro Ser Gly Ser Gln Ser Gly Gly
 980 985 990

Arg Gly Ser Pro Val Ser Pro Arg Arg His Gln Lys Gly Leu Leu Asn
 995 1000 1005

Cys Lys Met Pro Pro Ala Glu Lys Ala Ser Arg Ile Arg Ala Ala
 1010 1015 1020

Glu Lys Val Ser Arg Gly Asp Gln Glu Ser Pro Asp Ala Cys Leu
 1025 1030 1035

Pro Pro Ala Val Pro Glu Ala Pro Ala Pro Pro Gln Lys Pro Leu
 1040 1045 1050

Asn Ser Gln Ser Gln Lys His Leu Ala Pro Pro Pro Leu Leu Ser
 1055 1060 1065

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Pro | Leu | Leu | Pro | Ser | Ile | Lys | Pro | Thr | Val | Arg | Lys | Thr | Arg | Gln |
| 1070 | | | | | | 1075 | | | | | 1080 | | | |
| Asp | Gly | Ser | Gln | Glu | Ala | Pro | Glu | Ala | Pro | Leu | Ser | Ser | Glu | Leu |
| 1085 | | | | | | 1090 | | | | | 1095 | | | |
| Glu | Pro | Phe | His | Pro | Lys | Pro | Lys | Ile | Arg | Thr | Arg | Lys | Ser | Ser |
| 1100 | | | | | | 1105 | | | | | 1110 | | | |
| Arg | Met | Thr | Pro | Phe | Pro | Ala | Thr | Ser | Ala | Ala | Pro | Glu | Pro | His |
| 1115 | | | | | | 1120 | | | | | 1125 | | | |
| Pro | Ser | Thr | Ser | Thr | Ala | Gln | Pro | Val | Thr | Pro | Lys | Pro | Thr | Ser |
| 1130 | | | | | | 1135 | | | | | 1140 | | | |
| Gln | Ala | Thr | Arg | Ser | Arg | Thr | Asn | Arg | Ser | Ser | Val | Lys | Thr | Pro |
| 1145 | | | | | | 1150 | | | | | 1155 | | | |
| Glu | Pro | Val | Val | Pro | Thr | Ala | Pro | Glu | Leu | Gln | Pro | Ser | Thr | Ser |
| 1160 | | | | | | 1165 | | | | | 1170 | | | |
| Thr | Asp | Gln | Pro | Val | Thr | Ser | Glu | Pro | Thr | Ser | Gln | Val | Thr | Arg |
| 1175 | | | | | | 1180 | | | | | 1185 | | | |
| Gly | Arg | Lys | Ser | Arg | Ser | Ser | Val | Lys | Thr | Pro | Glu | Thr | Val | Val |
| 1190 | | | | | | 1195 | | | | | 1200 | | | |
| Pro | Thr | Ala | Leu | Glu | Leu | Gln | Pro | Ser | Thr | Ser | Thr | Asp | Arg | Pro |
| 1205 | | | | | | 1210 | | | | | 1215 | | | |
| Val | Thr | Ser | Glu | Pro | Thr | Ser | Gln | Ala | Thr | Arg | Gly | Arg | Lys | Asn |
| 1220 | | | | | | 1225 | | | | | 1230 | | | |
| Arg | Ser | Ser | Val | Lys | Thr | Pro | Glu | Pro | Val | Val | Pro | Thr | Ala | Pro |
| 1235 | | | | | | 1240 | | | | | 1245 | | | |
| Glu | Leu | Gln | Pro | Ser | Thr | Ser | Thr | Asp | Gln | Pro | Val | Thr | Ser | Glu |
| 1250 | | | | | | 1255 | | | | | 1260 | | | |
| Pro | Thr | Tyr | Gln | Ala | Thr | Arg | Gly | Arg | Lys | Asn | Arg | Ser | Ser | Val |
| 1265 | | | | | | 1270 | | | | | 1275 | | | |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Lys | Thr | Pro | Glu | Pro | Val | Val | Pro | Thr | Ala | Pro | Glu | Leu | Arg | Pro |
| 1280 | | | | | | 1285 | | | | | 1290 | | | |
| Ser | Thr | Ser | Thr | Asp | Arg | Pro | Val | Thr | Pro | Lys | Pro | Thr | Ser | Arg |
| 1295 | | | | | | 1300 | | | | | 1305 | | | |
| Thr | Thr | Arg | Ser | Arg | Thr | Asn | Met | Ser | Ser | Val | Lys | Thr | Pro | Glu |
| 1310 | | | | | | 1315 | | | | | 1320 | | | |
| Thr | Val | Val | Pro | Thr | Ala | Pro | Glu | Leu | Gln | Ile | Ser | Thr | Ser | Thr |
| 1325 | | | | | | 1330 | | | | | 1335 | | | |
| Asp | Gln | Pro | Val | Thr | Pro | Lys | Pro | Thr | Ser | Arg | Thr | Thr | Arg | Ser |
| 1340 | | | | | | 1345 | | | | | 1350 | | | |
| Arg | Thr | Asn | Met | Ser | Ser | Val | Lys | Asn | Pro | Glu | Ser | Thr | Val | Pro |
| 1355 | | | | | | 1360 | | | | | 1365 | | | |
| Ile | Ala | Pro | Glu | Leu | Pro | Pro | Ser | Thr | Ser | Thr | Glu | Gln | Pro | Val |
| 1370 | | | | | | 1375 | | | | | 1380 | | | |
| Thr | Pro | Glu | Pro | Thr | Ser | Arg | Ala | Thr | Arg | Gly | Arg | Lys | Asn | Arg |
| 1385 | | | | | | 1390 | | | | | 1395 | | | |
| Ser | Ser | Gly | Lys | Thr | Pro | Glu | Thr | Leu | Val | Pro | Thr | Ala | Pro | Lys |
| 1400 | | | | | | 1405 | | | | | 1410 | | | |
| Leu | Glu | Pro | Ser | Thr | Ser | Thr | Asp | Gln | Pro | Val | Thr | Pro | Glu | Pro |
| 1415 | | | | | | 1420 | | | | | 1425 | | | |
| Thr | Ser | Gln | Ala | Thr | Arg | Gly | Arg | Thr | Asn | Arg | Ser | Ser | Val | Lys |
| 1430 | | | | | | 1435 | | | | | 1440 | | | |
| Thr | Pro | Glu | Thr | Val | Val | Pro | Thr | Ala | Pro | Glu | Leu | Gln | Pro | Ser |
| 1445 | | | | | | 1450 | | | | | 1455 | | | |
| Thr | Ser | Thr | Asp | Gln | Pro | Val | Thr | Pro | Glu | Pro | Thr | Ser | Gln | Ala |
| 1460 | | | | | | 1465 | | | | | 1470 | | | |
| Thr | Arg | Gly | Arg | Thr | Asp | Arg | Ser | Ser | Val | Lys | Thr | Pro | Glu | Thr |
| 1475 | | | | | | 1480 | | | | | 1485 | | | |
| Val | Val | Pro | Thr | Ala | Pro | Glu | Leu | Gln | Ala | Ser | Ala | Ser | Thr | Asp |

| | | | | |
|-------------------------|---------------------|-----------------|--|------|
| 1490 | | 1495 | | 1500 |
| Gln Pro Val Thr Ser Glu | Pro Thr Ser Arg Thr | Thr Arg Gly Arg | | |
| 1505 | 1510 | 1515 | | |
| Lys Asn Arg Ser Ser Val | Lys Thr Pro Glu Thr | Val Val Pro Ala | | |
| 1520 | 1525 | 1530 | | |
| Ala Pro Glu Leu Gln Pro | Pro Thr Ser Thr Asp | Arg Pro Val Thr | | |
| 1535 | 1540 | 1545 | | |
| Pro Glu Pro Thr Ser Arg | Ala Thr Arg Gly Arg | Thr Asn Arg Ser | | |
| 1550 | 1555 | 1560 | | |
| Ser Val Lys Thr Pro Glu | Ser Ile Val Pro Ile | Ala Pro Glu Leu | | |
| 1565 | 1570 | 1575 | | |
| Gln Pro Ser Thr Ser Arg | Asn Gln Leu Val Thr | Pro Glu Pro Thr | | |
| 1580 | 1585 | 1590 | | |
| Ser Arg Ala Thr Arg Cys | Arg Thr Asn Arg Ser | Ser Val Lys Thr | | |
| 1595 | 1600 | 1605 | | |
| Pro Glu Pro Val Val Pro | Thr Ala Pro Glu Pro | His Pro Thr Thr | | |
| 1610 | 1615 | 1620 | | |
| Ser Thr Asp Gln Pro Val | Thr Pro Lys Leu Thr | Ser Arg Ala Thr | | |
| 1625 | 1630 | 1635 | | |
| Arg Arg Lys Thr Asn Arg | Ser Ser Val Lys Thr | Pro Lys Pro Val | | |
| 1640 | 1645 | 1650 | | |
| Glu Pro Ala Ala Ser Asp | Leu Glu Pro Phe Thr | Pro Thr Asp Gln | | |
| 1655 | 1660 | 1665 | | |
| Ser Val Thr Pro Glu Ala | Ile Ala Gln Gly Gly | Gln Ser Lys Thr | | |
| 1670 | 1675 | 1680 | | |
| Leu Arg Ser Ser Thr Val | Arg Ala Met Pro Val | Pro Thr Thr Pro | | |
| 1685 | 1690 | 1695 | | |
| Glu Phe Gln Ser Pro Val | Thr Thr Asp Gln Pro | Ile Ser Pro Glu | | |
| 1700 | 1705 | 1710 | | |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Pro | Ile | Thr | Gln | Pro | Ser | Cys | Ile | Lys | Arg | Gln | Arg | Ala | Ala | Gly |
| 1715 | | | | | | 1720 | | | | | 1725 | | | |
| Asn | Pro | Gly | Ser | Leu | Ala | Ala | Pro | Ile | Asp | His | Lys | Pro | Cys | Ser |
| 1730 | | | | | | 1735 | | | | | 1740 | | | |
| Ala | Pro | Leu | Glu | Pro | Lys | Ser | Gln | Ala | Ser | Arg | Asn | Gln | Arg | Trp |
| 1745 | | | | | | 1750 | | | | | 1755 | | | |
| Gly | Ala | Val | Arg | Ala | Ala | Glu | Ser | Leu | Thr | Ala | Ile | Pro | Glu | Pro |
| 1760 | | | | | | 1765 | | | | | 1770 | | | |
| Ala | Ser | Pro | Gln | Leu | Leu | Glu | Thr | Pro | Ile | His | Ala | Ser | Gln | Ile |
| 1775 | | | | | | 1780 | | | | | 1785 | | | |
| Gln | Lys | Val | Glu | Pro | Ala | Gly | Arg | Ser | Arg | Phe | Thr | Pro | Glu | Leu |
| 1790 | | | | | | 1795 | | | | | 1800 | | | |
| Gln | Pro | Lys | Ala | Ser | Gln | Ser | Arg | Lys | Arg | Ser | Leu | Ala | Thr | Met |
| 1805 | | | | | | 1810 | | | | | 1815 | | | |
| Asp | Ser | Pro | Pro | His | Gln | Lys | Gln | Pro | Gln | Arg | Gly | Glu | Val | Ser |
| 1820 | | | | | | 1825 | | | | | 1830 | | | |
| Gln | Lys | Thr | Val | Ile | Ile | Lys | Glu | Glu | Glu | Glu | Asp | Thr | Ala | Glu |
| 1835 | | | | | | 1840 | | | | | 1845 | | | |
| Lys | Pro | Gly | Lys | Glu | Glu | Asp | Val | Val | Thr | Pro | Lys | Pro | Gly | Lys |
| 1850 | | | | | | 1855 | | | | | 1860 | | | |
| Arg | Lys | Arg | Asp | Gln | Ala | Glu | Glu | Glu | Pro | Asn | Arg | Ile | Pro | Ser |
| 1865 | | | | | | 1870 | | | | | 1875 | | | |
| Arg | Ser | Leu | Arg | Arg | Thr | Lys | Leu | Asn | Gln | Glu | Ser | Thr | Ala | Pro |
| 1880 | | | | | | 1885 | | | | | 1890 | | | |
| Lys | Val | Leu | Phe | Thr | Gly | Val | Val | Asp | Ala | Arg | Gly | Glu | Arg | Ala |
| 1895 | | | | | | 1900 | | | | | 1905 | | | |
| Val | Leu | Ala | Leu | Gly | Gly | Ser | Leu | Ala | Gly | Ser | Ala | Ala | Glu | Ala |
| 1910 | | | | | | 1915 | | | | | 1920 | | | |

Ser His Leu Val Thr Asp Arg Ile Arg Arg Thr Val Lys Phe Leu
 1925 1930 1935

Cys Ala Leu Gly Arg Gly Ile Pro Ile Leu Ser Leu Asp Trp Leu
 1940 1945 1950

His Gln Ser Arg Lys Ala Gly Phe Phe Leu Pro Pro Asp Glu Tyr
 1955 1960 1965

Val Val Thr Asp Pro Glu Gln Glu Lys Asn Phe Gly Phe Ser Leu
 1970 1975 1980

Gln Asp Ala Leu Ser Arg Ala Arg Glu Arg Arg Leu Leu Glu Gly
 1985 1990 1995

Tyr Glu Ile Tyr Val Thr Pro Gly Val Gln Pro Pro Pro Pro Gln
 2000 2005 2010

Met Gly Glu Ile Ile Ser Cys Cys Gly Gly Thr Tyr Leu Pro Ser
 2015 2020 2025

Met Pro Arg Ser Tyr Lys Pro Gln Arg Val Val Ile Thr Cys Pro
 2030 2035 2040

Gln Asp Phe Pro His Cys Ser Ile Pro Leu Arg Val Gly Leu Pro
 2045 2050 2055

Leu Leu Ser Pro Glu Phe Leu Leu Thr Gly Val Leu Lys Gln Glu
 2060 2065 2070

Ala Lys Pro Glu Ala Phe Val Leu Ser Pro Leu Glu Met Ser Ser
 2075 2080 2085

Thr

<210> 38
 <211> 1972
 <212> PRT
 <213> Homo sapiens

<400> 38

Met Asp Pro Thr Gly Ser Gln Leu Asp Ser Asp Phe Ser Gln Gln Asp

| | | | |
|-----|-----|-----|-----|
| 1 | 5 | 10 | 15 |
| Thr | Pro | Cys | Leu |
| | 20 | | |
| Ile | Ile | Glu | Asp |
| | | 25 | |
| Ser | Gln | Pro | Glu |
| | | | 30 |
| Ser | Gln | Val | Leu |
| | | | |
| Glu | Asp | Asp | Ser |
| | 35 | | |
| Gly | Ser | His | Phe |
| | | 40 | |
| Ser | Met | Leu | Ser |
| | | | 45 |
| Arg | His | Leu | Pro |
| | | | |
| Asn | Leu | Gln | Thr |
| | 50 | | |
| His | Lys | Glu | Asn |
| | | 55 | |
| Pro | Val | Leu | Asp |
| | | | 60 |
| Val | Val | Ser | Asn |
| | | | |
| Pro | Glu | Gln | Thr |
| | 65 | | |
| Ala | Gly | Glu | Glu |
| | 70 | | |
| Arg | Gly | Asp | Gly |
| | | 75 | |
| Asn | Ser | Gly | Phe |
| | | | 80 |
| Asn | Glu | His | Leu |
| | 85 | | |
| Lys | Glu | Asn | Lys |
| | | 90 | |
| Val | Ala | Asp | Pro |
| | | | 95 |
| Val | Asp | Ser | Ser |
| | | | |
| Asn | Leu | Asp | Thr |
| | 100 | | |
| Cys | Gly | Ser | Ile |
| | | 105 | |
| Ser | Gln | Val | Ile |
| | | | 110 |
| Glu | Gln | Leu | Pro |
| | | | |
| Gln | Pro | Asn | Arg |
| | 115 | | |
| Thr | Ser | Ser | Val |
| | | 120 | |
| Leu | Gly | Met | Ser |
| | | | 125 |
| Val | Glu | Ser | Ala |
| | | | |
| Pro | Ala | Val | Glu |
| | 130 | | |
| Glu | Glu | Glu | Lys |
| | | 135 | |
| Gly | Glu | Glu | Leu |
| | | | 140 |
| Glu | Gln | Lys | Glu |
| | | | |
| Glu | Lys | Glu | Glu |
| | 145 | | |
| Asp | Thr | Ser | Gly |
| | | 150 | |
| Asn | Thr | Thr | His |
| | | 155 | |
| Ser | Leu | Gly | Ala |
| | | | 160 |
| Glu | Asp | Thr | Ala |
| | 165 | | |
| Ser | Gln | Leu | Gly |
| | | 170 | |
| Val | Leu | Glu | Leu |
| | | | 175 |
| Ser | | | |
| | | | |
| Gln | Ser | Gln | Asp |
| | 180 | | |
| Val | Glu | Glu | Asn |
| | | 185 | |
| Thr | Val | Pro | Tyr |
| | | | 190 |
| Glu | Val | Asp | Lys |
| | | | |
| Glu | Gln | Leu | Gln |
| | 195 | | |
| Ser | Val | Thr | Thr |
| | | 200 | |
| Asn | Ser | Gly | Tyr |
| | | | 205 |
| Thr | Arg | Leu | Ser |
| | | | |
| Asp | Val | Asp | Ala |
| | 210 | | |
| Asn | Thr | Ala | Ile |
| | | 215 | |
| Lys | His | Glu | Glu |
| | | | 220 |
| Gln | Ser | Asn | Glu |
| | | | |
| Asp | Ile | Pro | Ile |
| | 225 | | |
| Ala | Glu | Gln | Ser |
| | 230 | | |
| Ser | Ser | Lys | Asp |
| | | | 235 |
| Ile | Pro | Val | Thr |
| | | | 240 |
| Ala | | | |

Gln Pro Ser Lys Asp Val His Val Val Lys Glu Gln Asn Pro Pro Pro
 245 250 255

Ala Arg Ser Glu Asp Met Pro Phe Ser Pro Lys Ala Ser Val Ala Ala
 260 265 270

Met Glu Ala Lys Glu Gln Leu Ser Ala Gln Glu Leu Met Glu Ser Gly
 275 280 285

Leu Gln Ile Gln Lys Ser Pro Glu Pro Glu Val Leu Ser Thr Gln Glu
 290 295 300

Asp Leu Phe Asp Gln Ser Asn Lys Thr Val Ser Ser Asp Gly Cys Ser
 305 310 315 320

Thr Pro Ser Arg Glu Glu Gly Gly Cys Ser Leu Ala Ser Thr Pro Ala
 325 330 335

Thr Thr Leu His Leu Leu Gln Leu Ser Gly Gln Arg Ser Leu Val Gln
 340 345 350

Asp Ser Leu Ser Thr Asn Ser Ser Asp Leu Val Ala Pro Ser Pro Asp
 355 360 365

Ala Phe Arg Ser Thr Pro Phe Ile Val Pro Ser Ser Pro Thr Glu Gln
 370 375 380

Glu Gly Arg Gln Asp Lys Pro Met Asp Thr Ser Val Leu Ser Glu Glu
 385 390 395 400

Gly Gly Glu Pro Phe Gln Lys Lys Leu Gln Ser Gly Glu Pro Val Glu
 405 410 415

Leu Glu Asn Pro Pro Leu Leu Pro Glu Ser Thr Val Ser Pro Gln Ala
 420 425 430

Ser Thr Pro Ile Ser Gln Ser Thr Pro Val Phe Pro Pro Gly Ser Leu
 435 440 445

Pro Ile Pro Ser Gln Pro Gln Phe Ser His Asp Ile Phe Ile Pro Ser
 450 455 460

Pro Ser Leu Glu Glu Gln Ser Asn Asp Gly Lys Lys Asp Gly Asp Met
 465 470 475 480

His Ser Ser Ser Leu Thr Val Glu Cys Ser Lys Thr Ser Glu Ile Glu
 485 490 495

Pro Lys Asn Ser Pro Glu Asp Leu Gly Leu Ser Leu Thr Gly Asp Ser
 500 505 510

Cys Lys Leu Met Leu Ser Thr Ser Glu Tyr Ser Gln Ser Pro Lys Met
 515 520 525

Glu Ser Leu Ser Ser His Arg Ile Asp Glu Asp Gly Glu Asn Thr Gln
 530 535 540

Ile Glu Asp Thr Glu Pro Met Ser Pro Val Leu Asn Ser Lys Phe Val
 545 550 555 560

Pro Ala Glu Asn Asp Ser Ile Leu Met Asn Pro Ala Gln Asp Gly Glu
 565 570 575

Val Gln Leu Ser Gln Asn Asp Asp Lys Thr Lys Gly Asp Asp Thr Asp
 580 585 590

Thr Arg Asp Asp Ile Ser Ile Leu Ala Thr Gly Cys Lys Gly Arg Glu
 595 600 605

Glu Thr Val Ala Glu Asp Val Cys Ile Asp Leu Thr Cys Asp Ser Gly
 610 615 620

Ser Gln Ala Val Pro Ser Pro Ala Thr Arg Ser Glu Ala Leu Ser Ser
 625 630 635 640

Val Leu Asp Gln Glu Glu Ala Met Glu Ile Lys Glu His His Pro Glu
 645 650 655

Glu Gly Ser Ser Gly Ser Glu Val Glu Glu Ile Pro Glu Thr Pro Cys
 660 665 670

Glu Ser Gln Gly Glu Glu Leu Lys Glu Glu Asn Met Glu Ser Val Pro
 675 680 685

Leu His Leu Ser Leu Thr Glu Thr Gln Ser Gln Gly Leu Cys Leu Gln
 690 695 700

Lys Glu Met Pro Lys Lys Glu Cys Ser Glu Ala Met Glu Val Glu Thr
 705 710 715 720

Ser Val Ile Ser Ile Asp Ser Pro Gln Lys Leu Ala Ile Leu Asp Gln
 725 730 735

Glu Leu Glu His Lys Glu Gln Glu Ala Trp Glu Glu Ala Thr Ser Glu
 740 745 750

Asp Ser Ser Val Val Ile Val Asp Val Lys Glu Pro Ser Pro Arg Val
 755 760 765

Asp Val Ser Cys Glu Pro Leu Glu Gly Val Glu Lys Cys Ser Asp Ser
 770 775 780

Gln Ser Trp Glu Asp Ile Ala Pro Glu Ile Glu Pro Cys Ala Glu Asn
 785 790 795 800

Arg Leu Asp Thr Lys Glu Glu Lys Ser Val Glu Tyr Glu Gly Asp Leu
 805 810 815

Lys Ser Gly Thr Ala Glu Thr Glu Pro Val Glu Gln Asp Ser Ser Gln
 820 825 830

Pro Ser Leu Pro Leu Val Arg Ala Asp Asp Pro Leu Arg Leu Asp Gln
 835 840 845

Glu Leu Gln Gln Pro Gln Thr Gln Glu Lys Thr Ser Asn Ser Leu Thr
 850 855 860

Glu Asp Ser Lys Met Ala Asn Ala Lys Gln Leu Ser Ser Asp Ala Glu
 865 870 875 880

Ala Gln Lys Leu Gly Lys Pro Ser Ala His Ala Ser Gln Ser Phe Cys
 885 890 895

Glu Ser Ser Ser Glu Thr Pro Phe His Phe Thr Leu Pro Lys Glu Gly
 900 905 910

Asp Ile Ile Pro Pro Leu Thr Gly Ala Thr Pro Pro Leu Ile Gly His

| | | |
|-----------------------------------------------------------------|------|------|
| 915 | 920 | 925 |
| Leu Lys Leu Glu Pro Lys Arg His Ser Thr Pro Ile Gly Ile Ser Asn | | |
| 930 | 935 | 940 |
| Tyr Pro Glu Ser Thr Ile Ala Thr Ser Asp Val Met Ser Glu Ser Met | | |
| 945 | 950 | 955 |
| | | 960 |
| Val Glu Thr His Asp Pro Ile Leu Gly Ser Gly Lys Gly Asp Ser Gly | | |
| | 965 | 970 |
| | | 975 |
| Ala Ala Pro Asp Val Asp Asp Lys Leu Cys Leu Arg Met Lys Leu Val | | |
| | 980 | 985 |
| | | 990 |
| Ser Pro Glu Thr Glu Ala Ser Glu Glu Ser Leu Gln Phe Asn Leu Glu | | |
| 995 | 1000 | 1005 |
| Lys Pro Ala Thr Gly Glu Arg Lys Asn Gly Ser Thr Ala Val Ala | | |
| 1010 | 1015 | 1020 |
| Glu Ser Val Ala Ser Pro Gln Lys Thr Met Ser Val Leu Ser Cys | | |
| 1025 | 1030 | 1035 |
| Ile Cys Glu Ala Arg Gln Glu Asn Glu Ala Arg Ser Glu Asp Pro | | |
| 1040 | 1045 | 1050 |
| Pro Thr Thr Pro Ile Arg Gly Asn Leu Leu His Phe Pro Ser Ser | | |
| 1055 | 1060 | 1065 |
| Gln Gly Glu Glu Glu Lys Glu Lys Leu Glu Gly Asp His Thr Ile | | |
| 1070 | 1075 | 1080 |
| Arg Gln Ser Gln Gln Pro Met Lys Pro Ile Ser Pro Val Lys Asp | | |
| 1085 | 1090 | 1095 |
| Pro Val Ser Pro Ala Ser Gln Lys Met Val Ile Gln Gly Pro Ser | | |
| 1100 | 1105 | 1110 |
| Ser Pro Gln Gly Glu Ala Met Val Thr Asp Val Leu Glu Asp Gln | | |
| 1115 | 1120 | 1125 |
| Lys Glu Gly Arg Ser Thr Asn Lys Glu Asn Pro Ser Lys Ala Leu | | |
| 1130 | 1135 | 1140 |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Ile | Glu | Arg | Pro | Ser | Gln | Asn | Asn | Ile | Gly | Ile | Gln | Thr | Met | Glu |
| 1145 | | | | | | 1150 | | | | | 1155 | | | |
| Cys | Ser | Leu | Arg | Val | Pro | Glu | Thr | Val | Ser | Ala | Ala | Thr | Gln | Thr |
| 1160 | | | | | | 1165 | | | | | 1170 | | | |
| Ile | Lys | Asn | Val | Cys | Glu | Gln | Gly | Thr | Ser | Thr | Val | Asp | Gln | Asn |
| 1175 | | | | | | 1180 | | | | | 1185 | | | |
| Phe | Gly | Lys | Gln | Asp | Ala | Thr | Val | Gln | Thr | Glu | Arg | Gly | Ser | Gly |
| 1190 | | | | | | 1195 | | | | | 1200 | | | |
| Glu | Lys | Pro | Val | Ser | Ala | Pro | Gly | Asp | Asp | Thr | Glu | Ser | Leu | His |
| 1205 | | | | | | 1210 | | | | | 1215 | | | |
| Ser | Gln | Gly | Glu | Glu | Glu | Phe | Asp | Met | Pro | Gln | Pro | Pro | His | Gly |
| 1220 | | | | | | 1225 | | | | | 1230 | | | |
| His | Val | Leu | His | Arg | His | Met | Arg | Thr | Ile | Arg | Glu | Val | Arg | Thr |
| 1235 | | | | | | 1240 | | | | | 1245 | | | |
| Leu | Val | Thr | Arg | Val | Ile | Thr | Asp | Val | Tyr | Tyr | Val | Asp | Gly | Thr |
| 1250 | | | | | | 1255 | | | | | 1260 | | | |
| Glu | Val | Glu | Arg | Lys | Val | Thr | Glu | Glu | Thr | Glu | Glu | Pro | Ile | Val |
| 1265 | | | | | | 1270 | | | | | 1275 | | | |
| Glu | Cys | Gln | Glu | Cys | Glu | Thr | Glu | Val | Ser | Pro | Ser | Gln | Thr | Gly |
| 1280 | | | | | | 1285 | | | | | 1290 | | | |
| Gly | Ser | Ser | Gly | Asp | Leu | Gly | Asp | Ile | Ser | Ser | Phe | Ser | Ser | Lys |
| 1295 | | | | | | 1300 | | | | | 1305 | | | |
| Ala | Ser | Ser | Leu | His | Arg | Thr | Ser | Ser | Gly | Thr | Ser | Leu | Ser | Ala |
| 1310 | | | | | | 1315 | | | | | 1320 | | | |
| Met | His | Ser | Ser | Gly | Ser | Ser | Gly | Lys | Gly | Ala | Gly | Pro | Leu | Arg |
| 1325 | | | | | | 1330 | | | | | 1335 | | | |
| Gly | Lys | Thr | Ser | Gly | Thr | Glu | Pro | Ala | Asp | Phe | Ala | Leu | Pro | Ser |
| 1340 | | | | | | 1345 | | | | | 1350 | | | |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Ser | Arg | Gly | Gly | Pro | Gly | Lys | Leu | Ser | Pro | Arg | Lys | Gly | Val | Ser |
| 1355 | | | | | | 1360 | | | | | 1365 | | | |
| Gln | Thr | Gly | Thr | Pro | Val | Cys | Glu | Glu | Asp | Gly | Asp | Ala | Gly | Leu |
| 1370 | | | | | | 1375 | | | | | 1380 | | | |
| Gly | Ile | Arg | Gln | Gly | Gly | Lys | Ala | Pro | Val | Thr | Pro | Arg | Gly | Arg |
| 1385 | | | | | | 1390 | | | | | 1395 | | | |
| Gly | Arg | Arg | Gly | Arg | Pro | Pro | Ser | Arg | Thr | Thr | Gly | Thr | Arg | Glu |
| 1400 | | | | | | 1405 | | | | | 1410 | | | |
| Thr | Ala | Val | Pro | Gly | Pro | Leu | Gly | Ile | Glu | Asp | Ile | Ser | Pro | Asn |
| 1415 | | | | | | 1420 | | | | | 1425 | | | |
| Leu | Ser | Pro | Asp | Asp | Lys | Ser | Phe | Ser | Arg | Val | Val | Pro | Arg | Val |
| 1430 | | | | | | 1435 | | | | | 1440 | | | |
| Pro | Asp | Ser | Thr | Arg | Arg | Thr | Asp | Val | Gly | Ala | Gly | Ala | Leu | Arg |
| 1445 | | | | | | 1450 | | | | | 1455 | | | |
| Arg | Ser | Asp | Ser | Pro | Glu | Ile | Pro | Phe | Gln | Ala | Ala | Ala | Gly | Pro |
| 1460 | | | | | | 1465 | | | | | 1470 | | | |
| Ser | Asp | Gly | Leu | Asp | Ala | Ser | Ser | Pro | Gly | Asn | Ser | Phe | Val | Gly |
| 1475 | | | | | | 1480 | | | | | 1485 | | | |
| Leu | Arg | Val | Val | Ala | Lys | Trp | Ser | Ser | Asn | Gly | Tyr | Phe | Tyr | Ser |
| 1490 | | | | | | 1495 | | | | | 1500 | | | |
| Gly | Lys | Ile | Thr | Arg | Asp | Val | Gly | Ala | Gly | Lys | Tyr | Lys | Leu | Leu |
| 1505 | | | | | | 1510 | | | | | 1515 | | | |
| Phe | Asp | Asp | Gly | Tyr | Glu | Cys | Asp | Val | Leu | Gly | Lys | Asp | Ile | Leu |
| 1520 | | | | | | 1525 | | | | | 1530 | | | |
| Leu | Cys | Asp | Pro | Ile | Pro | Leu | Asp | Thr | Glu | Val | Thr | Ala | Leu | Ser |
| 1535 | | | | | | 1540 | | | | | 1545 | | | |
| Glu | Asp | Glu | Tyr | Phe | Ser | Ala | Gly | Val | Val | Lys | Gly | His | Arg | Lys |
| 1550 | | | | | | 1555 | | | | | 1560 | | | |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Glu | Ser | Gly | Glu | Leu | Tyr | Tyr | Ser | Ile | Glu | Lys | Glu | Gly | Gln | Arg |
| 1565 | | | | | | 1570 | | | | | 1575 | | | |
| Lys | Trp | Tyr | Lys | Arg | Met | Ala | Val | Ile | Leu | Ser | Leu | Glu | Gln | Gly |
| 1580 | | | | | | 1585 | | | | | 1590 | | | |
| Asn | Arg | Leu | Arg | Glu | Gln | Tyr | Gly | Leu | Gly | Pro | Tyr | Glu | Ala | Val |
| 1595 | | | | | | 1600 | | | | | 1605 | | | |
| Thr | Pro | Leu | Thr | Lys | Ala | Ala | Asp | Ile | Ser | Leu | Asp | Asn | Leu | Val |
| 1610 | | | | | | 1615 | | | | | 1620 | | | |
| Glu | Gly | Lys | Arg | Lys | Arg | Arg | Ser | Asn | Val | Ser | Ser | Pro | Ala | Thr |
| 1625 | | | | | | 1630 | | | | | 1635 | | | |
| Pro | Thr | Ala | Ser | Ser | Ser | Ser | Ser | Thr | Thr | Pro | Thr | Arg | Lys | Ile |
| 1640 | | | | | | 1645 | | | | | 1650 | | | |
| Thr | Glu | Ser | Pro | Arg | Ala | Ser | Met | Gly | Val | Leu | Ser | Gly | Lys | Arg |
| 1655 | | | | | | 1660 | | | | | 1665 | | | |
| Lys | Leu | Ile | Thr | Ser | Glu | Glu | Glu | Arg | Ser | Pro | Ala | Lys | Arg | Gly |
| 1670 | | | | | | 1675 | | | | | 1680 | | | |
| Arg | Lys | Ser | Ala | Thr | Val | Lys | Pro | Gly | Ala | Val | Gly | Ala | Gly | Glu |
| 1685 | | | | | | 1690 | | | | | 1695 | | | |
| Phe | Val | Ser | Pro | Cys | Glu | Ser | Gly | Asp | Asn | Thr | Gly | Glu | Pro | Ser |
| 1700 | | | | | | 1705 | | | | | 1710 | | | |
| Ala | Leu | Glu | Glu | Gln | Arg | Gly | Pro | Leu | Pro | Leu | Asn | Lys | Thr | Leu |
| 1715 | | | | | | 1720 | | | | | 1725 | | | |
| Phe | Leu | Gly | Tyr | Ala | Phe | Leu | Leu | Thr | Met | Ala | Thr | Thr | Ser | Asp |
| 1730 | | | | | | 1735 | | | | | 1740 | | | |
| Lys | Leu | Ala | Ser | Arg | Ser | Lys | Leu | Pro | Asp | Gly | Pro | Thr | Gly | Ser |
| 1745 | | | | | | 1750 | | | | | 1755 | | | |
| Ser | Glu | Glu | Glu | Glu | Glu | Phe | Leu | Glu | Ile | Pro | Pro | Phe | Asn | Lys |
| 1760 | | | | | | 1765 | | | | | 1770 | | | |
| Gln | Tyr | Thr | Glu | Ser | Gln | Leu | Arg | Ala | Gly | Ala | Gly | Tyr | Ile | Leu |

| | | | | |
|-------------------------------------------------------------|--|------|--|------|
| 1775 | | 1780 | | 1785 |
| Glu Asp Phe Asn Glu Ala Gln Cys Asn Thr Ala Tyr Gln Cys Leu | | | | |
| 1790 | | 1795 | | 1800 |
| Leu Ile Ala Asp Gln His Cys Arg Thr Arg Lys Tyr Phe Leu Cys | | | | |
| 1805 | | 1810 | | 1815 |
| Leu Ala Ser Gly Ile Pro Cys Val Ser His Val Trp Val His Asp | | | | |
| 1820 | | 1825 | | 1830 |
| Ser Cys His Ala Asn Gln Leu Gln Asn Tyr Arg Asn Tyr Leu Leu | | | | |
| 1835 | | 1840 | | 1845 |
| Pro Ala Gly Tyr Ser Leu Glu Glu Gln Arg Ile Leu Asp Trp Gln | | | | |
| 1850 | | 1855 | | 1860 |
| Pro Arg Glu Asn Pro Phe Gln Asn Leu Lys Val Leu Leu Val Ser | | | | |
| 1865 | | 1870 | | 1875 |
| Asp Gln Gln Gln Asn Phe Leu Glu Leu Trp Ser Glu Ile Leu Met | | | | |
| 1880 | | 1885 | | 1890 |
| Thr Gly Gly Ala Ala Ser Val Lys Gln His His Ser Ser Ala His | | | | |
| 1895 | | 1900 | | 1905 |
| Asn Lys Asp Ile Ala Leu Gly Val Phe Asp Val Val Val Thr Asp | | | | |
| 1910 | | 1915 | | 1920 |
| Pro Ser Cys Pro Ala Ser Val Leu Lys Cys Ala Glu Ala Leu Gln | | | | |
| 1925 | | 1930 | | 1935 |
| Leu Pro Val Val Ser Gln Glu Trp Val Ile Gln Cys Leu Ile Val | | | | |
| 1940 | | 1945 | | 1950 |
| Gly Glu Arg Ile Gly Phe Lys Gln His Pro Lys Tyr Lys His Asp | | | | |
| 1955 | | 1960 | | 1965 |
| Tyr Val Ser His | | | | |
| 1970 | | | | |

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<212> PRT

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Met Asn Glu Met Asn Val Pro Val Asp Pro Leu Glu Asn Lys Val Asn
35 40 45

Ser Thr Asn Ile Ile Glu Gly Ser Pro Lys Ala Asn Pro Asn Pro Val
50 55 60

Lys Phe Met Asn Thr Ser Glu Ile Phe Gln Lys Ser Leu Gly Leu Leu
65 70 75 80

Asp Glu Ser Pro Arg His Asp Asp Glu Leu Asn Ile Glu Val Gly Asp
85 90 95

Asn Asp Arg Pro Asn Ala Asn Ile Leu His Asn Glu Arg Thr Pro Asp
100 105 110

Leu Asp Arg Ile Ala Asn Phe Phe Lys Ser Asn Arg Thr Pro Gly Lys
115 120 125

Glu Asn Leu Leu Thr Lys Tyr Gln Ser Ser Asp Leu Glu Asp Thr Pro
130 135 140

Leu Met Leu Arg Lys Lys Met Thr Phe Gln Thr Pro Thr Asp Pro Leu
145 150 155 160

Glu Gln Lys Thr Phe Lys Lys Leu Lys Ser Asp Thr Gly Phe Cys Tyr
165 170 175

Tyr Gly Glu Gln Asn Asp Gly Glu Glu Asn Ala Ser Leu Glu Val Thr
180 185 190

Glu Ala Asp Ala Thr Phe Val Gln Met Ala Glu Arg Ser Ala Asp Asn
195 200 205

Tyr Asp Cys Ala Leu Glu Gly Ile Val Thr Pro Lys Arg Tyr Lys Asp
 210 215 220

Glu Leu Ser Lys Ser Gly Gly Met Gln Asp Glu Arg Val Gln Lys Thr
 225 230 235 240

Gln Ile Met Ile Ser Ala Glu Ser Pro Asn Ser Ile Ser Ser Tyr Asp
 245 250 255

Lys Asn Lys Ile Thr Gly Asn Gly Arg Thr Thr Arg Asn Val Asn Lys
 260 265 270

Val Phe Asn Asn Asn Glu Asp Asn Ile Gly Ala Ile Glu Glu Lys Asn
 275 280 285

Pro Val Lys Lys Lys Ser Glu Asn Tyr Ser Ser Asp Asp Leu Arg Glu
 290 295 300

Arg Asn Asn Gln Ile Ile Gln Ser Asn Glu Ser Glu Glu Ile Asn Glu
 305 310 315 320

Leu Glu Lys Asn Leu Asn Val Ser Gly Arg Glu Asn Asp Val Asn Asn
 325 330 335

Leu Asp Ile Asp Ile Asn Ser Ala Val Ser Gly Thr Pro Ser Arg Asn
 340 345 350

Asn Ala Glu Glu Glu Met Tyr Ser Ser Glu Ser Val Asn Asn Arg Glu
 355 360 365

Pro Ser Lys Lys Trp Ile Phe Arg Tyr Ser Lys Asp Lys Thr Glu Asn
 370 375 380

Asn Ser Asn Arg Ser Thr Gln Ile Val Asn Asn Pro Arg Thr Gln Glu
 385 390 395 400

Met Pro Leu Asp Ser Ile Ser Ile Asp Thr Gln Pro Leu Ser Lys Ser
 405 410 415

Phe Asn Thr Glu Thr Asn Asn Glu Leu Glu Thr Gln Ile Ile Val Ser
 420 425 430

Ser Leu Ser Gln Gly Ile Ser Ala Gln Lys Gly Pro Val Phe His Ser

| | | | | |
|-----------------------------------------------------------------|--|-----|--|-----|
| 435 | | 440 | | 445 |
| Thr Gly Gln Thr Glu Glu Ile Lys Thr Gln Ile Ile Asn Ser Pro Glu | | | | |
| 450 | | 455 | | 460 |
| Gln Asn Ala Leu Asn Ala Thr Phe Glu Thr Pro Val Thr Leu Ser Arg | | | | |
| 465 | | 470 | | 475 |
| | | | | 480 |
| Ile Asn Phe Glu Pro Ile Leu Glu Val Pro Glu Thr Ser Ser Pro Ser | | | | |
| | | 485 | | 490 |
| | | | | 495 |
| Lys Asn Thr Met Ser Lys Pro Ser Asn Ser Ser Pro Ile Pro Lys Glu | | | | |
| | | 500 | | 505 |
| | | | | 510 |
| Lys Asp Thr Phe Asn Ile His Glu Arg Glu Val Glu Thr Asn Asn Val | | | | |
| | | 515 | | 520 |
| | | | | 525 |
| Phe Ser Asn Asp Ile Gln Asn Ser Ser Asn Ala Ala Thr Arg Asp Asp | | | | |
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| Ile Ile Ile Ala Gly Ser Ser Asp Phe Asn Glu Gln Lys Glu Ile Thr | | | | |
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| | | | | 560 |
| Asp Arg Ile Tyr Leu Gln Leu Ser Gly Lys Gln Ile Ser Asp Ser Gly | | | | |
| | | 565 | | 570 |
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| Ser Asp Glu Thr Glu Arg Met Ser Pro Asn Glu Leu Asp Thr Lys Lys | | | | |
| | | 580 | | 585 |
| | | | | 590 |
| Glu Ser Thr Ile Met Ser Glu Val Glu Leu Thr Gln Glu Leu Pro Glu | | | | |
| | | 595 | | 600 |
| | | | | 605 |
| Val Glu Glu Gln Gln Asp Leu Gln Thr Ser Pro Lys Lys Leu Val Val | | | | |
| | | 610 | | 615 |
| | | | | 620 |
| Glu Glu Glu Thr Leu Met Glu Ile Lys Lys Ser Lys Gly Asn Ser Leu | | | | |
| | | 625 | | 630 |
| | | | | 635 |
| | | | | 640 |
| Gln Leu His Asp Asp Asn Lys Glu Cys Asn Ser Asp Lys Gln Asp Gly | | | | |
| | | 645 | | 650 |
| | | | | 655 |
| Thr Glu Ser Leu Asp Val Ala Leu Ile Glu His Glu Ser Lys Gly Gln | | | | |
| | | 660 | | 665 |
| | | | | 670 |

Ser Ser Glu Leu Gln Lys Asn Leu Met Gln Leu Phe Pro Ser Glu Ser
 675 680 685

Gln Glu Ile Ile Gln Asn Arg Arg Thr Ile Lys Arg Arg Gln Lys Asp
 690 695 700

Thr Ile Glu Ile Gly Glu Glu Glu Glu Asn Arg Ser Thr Lys Thr Ser
 705 710 715 720

Pro Thr Lys His Leu Lys Arg Asn Ser Asp Leu Asp Ala Ala Ser Ile
 725 730 735

Lys Arg Glu Pro Ser Cys Ser Ile Thr Ile Gln Thr Gly Glu Thr Gly
 740 745 750

Ser Gly Lys Asp Ser Lys Glu Gln Ser Tyr Val Phe Pro Glu Gly Ile
 755 760 765

Arg Thr Ala Asp Asn Ser Phe Leu Ser Lys Asp Asp Ile Ile Phe Gly
 770 775 780

Asn Ala Val Trp Cys Gln Tyr Thr Trp Asn Tyr Lys Phe Tyr Pro Gly
 785 790 795 800

Ile Leu Leu Glu Val Asp Thr Asn Gln Asp Gly Cys Trp Ile Tyr Phe
 805 810 815

Glu Thr Gly Arg Ser Leu Thr Lys Asp Glu Asp Ile Tyr Tyr Leu Asp
 820 825 830

Ile Arg Ile Gly Asp Ala Val Thr Phe Asp Gly Asn Glu Tyr Val Val
 835 840 845

Val Gly Leu Glu Cys Arg Ser His Asp Leu Asn Ile Ile Arg Cys Ile
 850 855 860

Arg Gly Tyr Asp Thr Val His Leu Lys Lys Lys Asn Ala Ser Gly Leu
 865 870 875 880

Leu Gly Lys Arg Thr Leu Ile Lys Ala Leu Ser Ser Ile Ser Leu Asp
 885 890 895

Leu Ser Glu Trp Ala Lys Arg Ala Lys Ile Ile Leu Glu Asp Asn Glu
900 905 910

Lys Asn Lys Gly Asp Ala Tyr Arg Tyr Leu Arg His Pro Ile Arg Gly
915 920 925

Arg Lys Ser Met Thr Asn Val Leu Ser Pro Lys Lys His Thr Asp Asp
930 935 940

Glu Lys Asp Ile Asn Thr His Thr Glu Val Tyr Asn Asn Glu Ile Glu
945 950 955 960

Ser Ser Ser Glu Lys Lys Glu Ile Val Lys Lys Asp Ser Arg Asp Ala
965 970 975

Leu Ala Glu His Ala Gly Ala Pro Ser Leu Leu Phe Ser Ser Gly Glu
980 985 990

Ile Arg Thr Gly Asn Val Phe Asp Lys Cys Ile Phe Val Leu Thr Ser
995 1000 1005

Leu Phe Glu Asn Arg Glu Glu Leu Arg Gln Thr Ile Glu Ser Gln
1010 1015 1020

Gly Gly Thr Val Ile Glu Ser Gly Phe Ser Thr Leu Phe Asn Phe
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Thr His Pro Leu Ala Lys Ser Leu Val Asn Lys Gly Asn Thr Asp
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Asn Ile Arg Glu Leu Ala Leu Lys Leu Ala Trp Lys Pro His Ser
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Leu Phe Ala Asp Cys Arg Phe Ala Cys Leu Ile Thr Lys Arg His
1070 1075 1080

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| aatgatggag | aagaaaatgc gtcattagaa gttacagagg cggatgccac ttttgtacag 600 |
| atggctgaac | gttctgctga taattatgac tgtgcattgg aaggaattgt tacacctaaa 660 |
| agatataaag | acgaattaag taaaagtgga ggaatgcaag atgaacgagt tcaaaaaact 720 |
| caaatcatga | tatcagcaga atcaccta atcgataagct cttatgacaa gaacaaaatt 780 |
| accgggaatg | gccggaccac aagaaatgta aacaaggttt ttaacaataa cgaagataac 840 |
| ataggagcta | tcgaggaaaa aaatccagta aaaaagaaaa gtgagaacta ttcatcagat 900 |

| | |
|--------------------------------------------------------------------|------|
| gatctcagag aacggaacaa tcaaataata caaagtaatg aatcagagga gattaacgaa | 960 |
| ttggaaaaga atctgaatgt ttcgggtaga gagaatgacg tgaacaattt agatatcgat | 1020 |
| attaatagtg ctgtgtctgg cacccttca cgcaacaatg cggaagaaga aatgtattcc | 1080 |
| agtgagagtg taaacaatcg ggaaccatcc aagaagtgga tattccgata ctcaaaagac | 1140 |
| aaaacggaaa ataatagcaa tagatctacg caaatagtca ataatccaag aacacaggaa | 1200 |
| atgccttttag atagtatttc aatcgatagc caacccttat ctaaaagttt caataccgaa | 1260 |
| acaaataatg aattagagac acagataatt gtttcatcgc tttcccaagg catatctgct | 1320 |
| cagaagggac ctgtttttca ttctactggc cagacagaag aaataaaaac ccaaataata | 1380 |
| aattctcctg aacaaaatgc tttgaatgca acctttgaaa ctcccgttac tctttctcgg | 1440 |
| attaattttg aacccatatt ggaagttcct gagactagtt caccatctaa gaatacgatg | 1500 |
| tcaaaaccct cgaattcttc acctattccg aaggaaaaag atacatttaa tatacacgag | 1560 |
| agagaagtag agacaaacaa tgttttttca aacgatatac aaaattcttc aaatgcagct | 1620 |
| accagagatg acattatcat agccggttca tctgatttca acgaacaaaa ggaaataacc | 1680 |
| gatagaatat acttacaact ttcaggaaag caaatatctg attcaggaag tgatgaaaca | 1740 |
| gaacgtatgt ccccaaatga gcttgatacg aaaaaggaaa gtacaatcat gagcgagggt | 1800 |
| gaactaacc cagaactgcc tgaagttgaa gagcagcaag atcttcaaac gtctccaaaa | 1860 |
| aagctggtag tcgaggaaga aactttaatg gagataaaaa aaagcaaggg gaactcactt | 1920 |
| cagcttcatg atgataataa agaatgcaat tcagataaac aagatggcac agagtctttg | 1980 |
| gatgtagctt tgattgaaca cgaaagcaaa ggacagagct cagaacttca gaaaaacctc | 2040 |
| atgcaattat ttccaagtga gtcacaggag attattcaga accgaagaac aataaagcga | 2100 |
| cgtcaaaaag atacaataga gatcggtgaa gaggaggaga acagaagcac taagacatca | 2160 |
| ccgacaaaac acctcaaaag aaattcagat ttggatgctg cttctatcaa aagggaaaccg | 2220 |
| tcttgcagca ttaccatata aacaggggag acaggttcgg gcaaagactc taaagaacag | 2280 |
| tcttacgtgt ttctgaagg tattagaacg gcagataata gtttcttatc gaaagacgac | 2340 |
| ataatttttg gaaatgcggt atggtgtcag tatacgtgga attacaaatt ttatccgggt | 2400 |
| attttattgg aagttgacac taatcaagat ggctgttgga tttatttcga aacaggaaga | 2460 |
| tcgctaacca aagatgagga catctactac ttagatatta gaatagggga tgctgttacc | 2520 |
| tttgatggaa atgagtacgt agtcgttggc ctagaatgtc gtagccatga tctcaacata | 2580 |

| | |
|---------------------------------------------------------------------|------|
| ataagatgta ttcgaggata tgatacgggt catttgaaaa aaaaaaatgc aagcggattg | 2640 |
| ttggggaaaa ggacgttaat taaagcacta agctcgatca gtcttgacct aagcgagtgg | 2700 |
| gctaaaagag cgaagatcat attagaagat aatgagaaaa ataaaggcga cgcgtatagg | 2760 |
| tacttgagac atcccattag gggaaggaaa tcaatgacca atgttctgtc tccgaagaaa | 2820 |
| catactgatg acgaaaagga cataaatacg catactgaag tgtacaataa cgaaatagaa | 2880 |
| tcgagctccg aaaagaagga aattgttaaa aaggattcta gagacgcatt agctgaacat | 2940 |
| gcaggagcgc caagcctgct tttttcttct ggtgaaatca gaacagggaa tgtatttgat | 3000 |
| aaatgtatgt ttgttttgac aagcctattc gaaaatagag aggaacttcg acagaccatt | 3060 |
| gaatcgcaag gcggcactgt aattgagtca ggattttcca ctttatttaa cttcactcat | 3120 |
| ccgctagcta aatcttttagt caataaagggt aatacagata atattcgaga attggccttg | 3180 |
| aagctagcct ggaaacctca ttccctatgt gcagactgca gatttgcttg cctaatacaca | 3240 |
| aaacggcatt taagaagctt aaagtactta gaaactttgg cgttgggggtg gcctacacta | 3300 |
| cactggaaat tcataagtgc atgcattgaa aagaaaagaa tagtaccaca tttaatatac | 3360 |
| caatacctat taccttcggg tgaaagtttt cggttatcgt tagattctcc atcaaagggg | 3420 |
| ggaatcatta aatccaacaa tattttttca ttttatacac aattcttacg cggatcta | 3480 |
| ttaagagatc agatatgtgg agtgaagaaa atgttaaattg actacattgt tattgtttgg | 3540 |
| ggtagatctg agttggacag ttttgtcaaa tttgcttttg catgtttgag cgcaggtaga | 3600 |
| atgcttaciaa ttgattttacc caatattgat gtagatgata cagagccatt gttaa | 3660 |
| ttagattctt tagtaccag aataggatca gaattatcta atcgaaagtt aaagtttctc | 3720 |
| atatatgcta acgaaaataa tggtaaattct cagatgaagc ttctcgaaag attgagaagt | 3780 |
| caaatatcac tgaaatttaa gaaatttaac tacatatttc aactgaatc taaagaatgg | 3840 |
| ctaattcaga caataattaa cgaggacact ggttttcacg atgatattac ggacaatgat | 3900 |
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 <212> PRT
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<220>
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<222> (5)..(5)
<223> Xaa = any amino acid

<220>
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<222> (6)..(6)
<223> Xaa = Ser or Thr

<400> 43

Arg Xaa Arg Ser Xaa Xaa
1 5

<210> 44
<211> 6
<212> PRT
<213> Artificial Sequence

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<220>
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<223> Xaa is any amino acid

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<223> Xaa is phosphorylated Ser or phosphorylated Thr

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<223> Xaa is any amino acid

<400> 44

Arg Ser Xaa Xaa Xaa Pro
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<210> 45
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 <223> Xaa is Ser or Thr

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 <223> Xaa is any amino acid

<400> 45

Xaa Pro Xaa Arg
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<210> 46
 <211> 16
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<220>
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 <223> Phosphorylated

<220>
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 <223> Xaa is any amino acid except Cys

<400> 46

Met Ala Xaa Xaa Xaa Xaa Thr Pro Xaa Xaa Xaa Xaa Ala Lys Lys Lys
 1 5 10 15

<210> 47
 <211> 15
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 <222> (3)..(6)
 <223> Xaa is any amino acid except Cys

<220>
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 <222> (7)..(7)
 <223> phosphorylated Thr

<220>
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 <222> (8)..(11)
 <223> Xaa is any amino acid except Cys

<400> 47

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Xaa | Xaa | Xaa | Xaa | Thr | Xaa | Xaa | Xaa | Xaa | Ala | Lys | Lys | Lys |
| 1 | | | | 5 | | | | | 10 | | | | 15 | |

<210> 48
 <211> 16
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<220>
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 <223> Xaa is amino acid except Cys

<220>
 <221> MOD_RES
 <222> (8)..(8)
 <223> phosphorylated

<220>
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 <222> (9)..(12)
 <223> Xaa is amino acid except Cys

<400> 48

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Xaa | Xaa | Xaa | Xaa | Ser | Thr | Xaa | Xaa | Xaa | Xaa | Ala | Lys | Lys | Lys |
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<220>

<221> MOD_RES

<222> (6)..(6)

<223> phosphorylated

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<222> (8)..(10)

<223> Xaa is any amino acid except Cys

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5

10

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<220>

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<222> (7)..(7)

<223> phosphorylated Ser

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5

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15

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<223> PHOSPHORYLATION

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Met Gln Ser Thr Pro Leu

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5

<210> 52

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<220>

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<223> Xaa is phosphorylated Thr or phosphorylated Ser

<220>

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<222> (3)..(3)

<223> Xaa is Pro or any amino acid

<400> 52

Ser Xaa Xaa

1

<210> 53

<211> 7

<212> PRT

<213> Artificial Sequence

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<220>

<221> MOD_RES

<222> (5)..(5)

<223> PHOSPHORYLATION

<400> 53

Leu Leu Cys Ser Thr Pro Asn
1 5

<210> 54
<211> 16
<212> PRT
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<220>
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Met Ala Xaa Xaa Xaa Xaa Ser Ser Xaa Xaa Xaa Xaa Ala Lys Lys Lys
1 5 10 15

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<220>
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<220>
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<222> (6)..(6)

<223> Xaa is phosphorylated Ser or phosphorylated Thr

<400> 55

Arg Xaa Arg Ser Xaa Xaa

1 5

<210> 56

<211> 16

<212> PRT

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<223> synthetic

<220>

<221> MOD_RES

<222> (8)..(8)

<223> PHOSPHORYLATION

<400> 56

Met Ala Gly Pro Met Gln Ser Thr Pro Leu Asn Gly Ala Tyr Lys Lys

1 5 10 15

<210> 57

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<220>

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<222> (3)..(5)

<223> Xaa = any amino acid except Cys

<220>

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<223> Xaa = Ala, Ile, Leu, Met, Asn, Pro, Ser, Thr, or Val

<220>

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<222> (7)..(7)

<223> Xaa = phosphorylated Ser or phosphorylated Thr

<220>

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<222> (9)..(9)

<223> Xaa = biased mixture of 25% E and 75% any amino acid except Arg, Cys, His, or Lys

<220>
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 <222> (10)..(12)
 <223> Xaa = any amino acid except Cys

 <400> 57

 Met Ala Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa Ala Lys Lys Lys
 1 5 10 15

<210> 58
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 <223> Xaa is any amino acid except Cys

<220>
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<400> 58

 Met Ala Xaa Xaa Xaa Xaa Ser Xaa Xaa Xaa Xaa Xaa Ala Lys Lys Lys
 1 5 10 15

<210> 59
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<220>

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 <223> Xaa is any amino acid except Cys

<400> 59

Gly Ala Xaa Xaa Xaa Xaa Ser Xaa Xaa Phe Xaa Xaa Ala Tyr Lys Lys
 1 5 10 15

Lys

<210> 60
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 <223> Xaa = phosphorylated Ser or phosphorylated Thr

<400> 60

Tyr Asp Ile Xaa Gln Val Phe Pro Phe
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<210> 61
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<220>
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<220>
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 <222> (1)..(1)
 <223> Xaa is aminohexanoic acid

<220>
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 <222> (1)..(1)
 <223> BIOTINYLATION

 <220>
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 <222> (3)..(3)
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 <220>
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 <222> (7)..(9)
 <223> Xaa is any amino acid except Cys

 <220>
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 <223> Xaa is a biased mixture of Ala, Ile, Let, Met, Asn, Pro, Ser, Thr, or Val

 <220>
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 <223> Xaa is phosphorylated Ser or phosphorylated Thr

 <220>
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 <223> Xaa is biased mixture of 25% E and 75% any amino acid except Arg, Cys, His, or Lys

 <220>
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 <400> 61

Xaa Gly Xaa Gly Gly Ala Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa
 1 5 10 15

Ala Lys Lys Lys
 20

<210> 62
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 <212> PRT
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<223> Xaa is any amino acid except Cys

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<220>
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<223> Xaa is any amino acid except Cys

<400> 62

Gly Ala Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa Ala Lys Lys Lys
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<210> 63

<400> 63
000

<210> 64

<400> 64
000

<210> 65
<211> 16
<212> PRT
<213> Artificial Sequence

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<223> synthetic

<220>
<221> MOD_RES
<222> (8)..(8)
<223> PHOSPHORYLATION

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<400> 65

Met Ala Gly Pro Met Gln Ser Ser Pro Leu Asn Gly Ala Tyr Lys Lys
1 5 10 15

<210> 66

<211> 16

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<213> Artificial Sequence

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<223> Phosphorylation

<400> 66

Met Ala Gly Pro Met Gln Ser Tyr Pro Leu Asn Gly Ala Tyr Lys Lys
1 5 10 15

<210> 67

<211> 15

<212> PRT

<213> Artificial Sequence

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<220>

<221> MOD_RES

<222> (8)..(8)

<223> PHOSPHORYLATION

<400> 67

Met Ala Gly Pro Met Gln Val Thr Pro Leu Asn Gly Ala Lys Lys
1 5 10 15

<210> 68

<211> 16

<212> PRT

<213> Artificial Sequence

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1 5 10 15

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Met Ala Gly Pro Met Gln Gly Thr Pro Leu Asn Gly Ala Tyr Lys Lys
1 5 10 15

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<400> 71

Met Ala Gly Pro Met Gln Thr Thr Pro Leu Asn Gly Ala Tyr Lys Lys
1 5 10 15

<210> 72
<211> 15
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<220>
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<220>
<221> MOD_RES
<222> (8)..(8)
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<400> 72

Met Ala Gly Pro Met Gln Ser Thr Asn Leu Asn Gly Ala Lys Lys
1 5 10 15

<210> 73
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 73

Ala Gln Leu Leu Cys Ser Thr Pro Asn Gly Leu Asp Arg
1 5 10

<210> 74
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<400> 74

Pro Arg Leu Leu Cys Ser Thr Pro Ser Phe Lys Lys Thr

1 5 10

 <210> 75
 <211> 603
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 <213> Rattus norvegicus

 <400> 75

 Met Asn Ala Ala Ala Lys Ala Gly Lys Leu Ala Arg Ala Pro Ala Asp
 1 5 10 15

 Leu Gly Lys Gly Gly Val Pro Gly Asp Ala Val Pro Gly Ala Pro Val
 20 25 30

 Ala Ala Pro Leu Ala Lys Glu Ile Pro Glu Val Leu Val Asp Pro Arg
 35 40 45

 Ser Arg Gln Gln Tyr Val Arg Gly Arg Phe Leu Gly Lys Gly Gly Phe
 50 55 60

 Ala Lys Cys Phe Glu Ile Ser Asp Ser Asp Thr Lys Glu Val Phe Pro
 65 70 75 80

 Gly Lys Ile Val Pro Lys Ser Leu Leu Leu Lys Pro His Gln Lys Glu
 85 90 95

 Lys Met Ser Met Glu Thr Ser Ile His Arg Ser Leu Glu His Gln His
 100 105 110

 Val Val Gly Phe His Gly Phe Phe Glu Asp Ser Asp Phe Val Phe Val
 115 120 125

 Val Leu Glu Leu Cys Arg Arg Arg Ser Leu Leu Glu Leu His Lys Arg
 130 135 140

 Arg Lys Ala Leu Thr Glu Pro Glu Ala Arg Tyr Tyr Leu Arg Gln Ile
 145 150 155 160

 Val Leu Gly Cys Gln Tyr Leu His Arg Asn Gln Val Ile His Arg Asp
 165 170 175

 Leu Lys Leu Gly Asn Leu Phe Leu Asn Glu Asp Leu Glu Val Lys Ile
 180 185 190

Gly Asp Phe Gly Leu Ala Thr Lys Val Glu Tyr Glu Gly Glu Arg Lys
 195 200 205

Lys Thr Leu Cys Gly Thr Pro Asn Tyr Ile Ala Pro Glu Val Leu Ser
 210 215 220

Lys Lys Gly His Ser Phe Glu Val Asp Val Trp Ser Ile Gly Cys Ile
 225 230 235 240

Met Tyr Thr Leu Leu Val Gly Lys Pro Pro Phe Glu Thr Ser Cys Leu
 245 250 255

Lys Glu Thr Tyr Leu Arg Ile Lys Lys Asn Glu Tyr Ser Ile Pro Lys
 260 265 270

His Ile Asn Pro Val Ala Ala Ser Leu Ile Gln Lys Met Leu Gln Thr
 275 280 285

Asp Pro Ala Ala Arg Pro Thr Ile His Glu Leu Leu Asn Asp Glu Phe
 290 295 300

Phe Thr Ser Gly Tyr Ile Pro Ala Arg Leu Pro Ile Thr Cys Leu Thr
 305 310 315 320

Ile Pro Pro Arg Phe Ser Ile Ala Pro Ser Ser Leu Asp Pro Ser Asn
 325 330 335

Arg Lys Pro Leu Thr Val Leu Asn Lys Gly Val Glu Asn Pro Leu Pro
 340 345 350

Asp Arg Pro Arg Glu Lys Glu Glu Pro Val Val Arg Glu Thr Asn Glu
 355 360 365

Ala Ile Glu Cys His Leu Ser Asp Leu Leu Gln Gln Leu Thr Ser Val
 370 375 380

Asn Ala Ser Lys Pro Ser Glu Arg Gly Leu Val Arg Gln Glu Glu Ala
 385 390 395 400

Glu Asp Pro Ala Cys Ile Pro Ile Phe Trp Val Ser Lys Trp Val Asp
 405 410 415

Tyr Ser Asp Lys Tyr Gly Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val
420 425 430

Gly Val Leu Phe Asn Asp Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly
435 440 445

Asp Ser Leu Gln Tyr Ile Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr
450 455 460

Val Ser Ser His Pro Asn Ser Leu Met Lys Lys Ile Thr Leu Leu Asn
465 470 475 480

Tyr Phe Arg Asn Tyr Met Ser Glu His Leu Leu Lys Ala Gly Ala Asn
485 490 495

Ile Thr Pro Arg Glu Gly Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg
500 505 510

Thr Trp Phe Arg Thr Arg Ser Ala Ile Ile Leu His Leu Ser Asn Gly
515 520 525

Thr Val Gln Ile Asn Phe Phe Gln Asp His Thr Lys Leu Ile Arg Gly
530 535 540

Pro Leu Met Ala Ala Val Thr Tyr Ile Asn Glu Lys Arg Asp Phe Arg
545 550 555 560

Thr Tyr Arg Leu Ser Leu Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu
565 570 575

Ala Ser Arg Leu Arg Tyr Ala Arg Thr Met Val Asp Lys Leu Leu Ser
580 585 590

Ser Arg Ser Ala Cys Asn Arg Leu Lys Ala Ser
595 600

<210> 76
<211> 648
<212> PRT
<213> Caenorhabditis elegans

<400> 76

Met Asn Arg Leu Pro Asn Ile Ala Lys Pro Pro Gln Lys Ser Asn Gln
1 5 10 15

Arg Lys Glu Lys Ala Pro Pro Glu Val Pro Ala Leu Ile Ala Asp Lys
 20 25 30

Asp Arg Gly Thr Tyr Tyr Glu Lys Gly Arg Phe Leu Gly Lys Gly Gly
 35 40 45

Phe Ala His Cys Tyr Glu Leu Thr Asn Arg Ala Thr Arg Glu Val Val
 50 55 60

Ala Gly Lys Val Val Pro Lys Ser Met Leu Val Lys Gln Tyr Gln Arg
 65 70 75 80

Asp Lys Met Thr Gln Glu Val Gln Ile His Arg Glu Leu Gly His Ile
 85 90 95

Asn Ile Val Lys Leu Phe Asn Phe Phe Glu Asp Asn Leu Asn Val Tyr
 100 105 110

Ile Thr Leu Glu Leu Cys Ala Arg Arg Ser Leu Met Glu Leu His Lys
 115 120 125

Arg Arg Lys Ala Val Thr Glu Pro Glu Ala Arg Tyr Phe Thr His Gln
 130 135 140

Ile Val Asp Gly Val Leu Tyr Leu His Asp Leu Asn Ile Ile His Arg
 145 150 155 160

Asp Met Lys Leu Gly Asn Leu Phe Leu Asn Asp Asp Leu Val Val Lys
 165 170 175

Ile Gly Asp Phe Gly Leu Ala Thr Thr Val Asn Gly Asp Glu Arg Lys
 180 185 190

Lys Thr Leu Cys Gly Thr Pro Asn Tyr Ile Ala Pro Glu Val Leu Asn
 195 200 205

Lys Ala Gly His Ser Phe Glu Val Asp Ile Trp Ala Val Gly Cys Ile
 210 215 220

Leu Tyr Ile Leu Leu Phe Gly Gln Pro Pro Phe Glu Ser Lys Ser Leu
 225 230 235 240

Glu Glu Thr Tyr Ser Arg Ile Arg His Asn Asn Tyr Thr Ile Pro Ser
 245 250 255

Ile Ala Thr Gln Pro Ala Ala Ser Leu Ile Arg Lys Met Leu Asp Pro
 260 265 270

Glu Pro Thr Arg Arg Pro Thr Ala Lys Gln Val Gln Arg Asp Gly Phe
 275 280 285

Phe Lys Ser Gly Phe Met Pro Thr Arg Leu Pro Val Ser Cys Leu Thr
 290 295 300

Met Val Pro Lys Phe Gly Gly His Glu Thr Ser Met Met Glu Glu Asn
 305 310 315 320

Val Ala Pro Arg Gly Val Asp Ala Arg Ser Gln Arg Pro Leu Asn Gly
 325 330 335

Arg Ala Gly Leu Ser Ala Leu Pro Gln His Ile Val Ser Asn Asn Ala
 340 345 350

Asp Arg Glu Arg Ala Gln Gln Gln Ala Ala Glu Ala Thr Phe Arg Glu
 355 360 365

Pro Glu Asp Ala Tyr Leu Ser Gln Leu Phe His Gln Val Ala Val Leu
 370 375 380

Leu Glu Gln Arg Ile Pro Gly Leu Glu Glu Glu Glu Ala Ala Leu Asp
 385 390 395 400

Gly Tyr Gln Ser Pro Glu Cys Leu Pro Val Phe Trp Ile Ser Lys Trp
 405 410 415

Val Asp Tyr Ser Asp Lys Tyr Gly Ile Gly Tyr Gln Leu Cys Asp Asn
 420 425 430

Ser Val Gly Val Leu Phe Asn Asp Asn Ser Arg Ile Met Leu Asp Gln
 435 440 445

Ala Gly Asn Glu Leu Thr Tyr Ile Glu Lys Ser Asn Lys Glu His Tyr
 450 455 460

Phe Ser Met His Ser Gly Glu Met Pro Gly Leu Leu Asn Lys Lys Val
 465 470 475 480

Thr Leu Leu Lys Tyr Phe Arg Ser Tyr Met Asn Asp His Leu Val Lys
 485 490 495

Ala Gly Glu Gly Ser Glu Gln Arg Ala Gly Asp Asp Leu Ala Arg Leu
 500 505 510

Pro Thr Leu Arg Val Trp Phe Arg Thr Lys Ser Ala Ile Val Leu His
 515 520 525

Leu Ser Asn Gly Thr Val Gln Ile Asn Phe Phe Asn Asp His Val Lys
 530 535 540

Met Met Met Cys Pro Leu Met Gln Ala Val Thr Phe Ile Asp Gln Asn
 545 550 555 560

Lys Arg Met Leu Thr Tyr Lys Leu Asn Asn Leu Gln Arg Asn Gly Cys
 565 570 575

Pro Glu Lys Phe Leu His Arg Leu Lys Tyr Ala Lys Thr Met Ile Glu
 580 585 590

Arg Leu Met Ser Asp Ala Asn Val Val Ser Gln Asn Pro Ala Arg Gln
 595 600 605

Pro Asp Met Pro Arg Ser Met Ala Ala Ala Arg Ser Ala Ser Ala Gly
 610 615 620

Ser Arg Gly Pro Asn Gln Ala Ala Ser His Leu Pro Gln Ser Ala Ser
 625 630 635 640

Gly Ser Asn Ile His Pro Arg Arg
 645

<210> 77
 <211> 278
 <212> PRT
 <213> Homo sapiens

<400> 77

Ser Ile Ala Pro Ser Ser Leu Asp Pro Ser Asn Arg Lys Pro Leu Thr
 1 5 10 15

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Val | Leu | Asn | Lys | Gly | Leu | Glu | Asn | Pro | Leu | Pro | Glu | Arg | Pro | Arg | Glu | | | |
| | | | 20 | | | | | 25 | | | | | 30 | | | | | |
| Lys | Glu | Glu | Pro | Val | Val | Arg | Glu | Thr | Gly | Glu | Val | Val | Asp | Cys | His | | | |
| | | 35 | | | | | 40 | | | | | 45 | | | | | | |
| Leu | Ser | Asp | Met | Leu | Gln | Gln | Leu | His | Ser | Val | Asn | Ala | Ser | Lys | Pro | | | |
| | 50 | | | | | 55 | | | | | 60 | | | | | | | |
| Ser | Glu | Arg | Gly | Leu | Val | Arg | Gln | Glu | Glu | Ala | Glu | Asp | Pro | Ala | Cys | | | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | | | |
| Ile | Pro | Ile | Phe | Trp | Val | Ser | Lys | Trp | Val | Asp | Tyr | Ser | Asp | Lys | Tyr | | | |
| | | | 85 | | | | | | 90 | | | | | 95 | | | | |
| Gly | Leu | Gly | Tyr | Gln | Leu | Cys | Asp | Asn | Ser | Val | Gly | Val | Leu | Phe | Asn | | | |
| | | 100 | | | | | | 105 | | | | | 110 | | | | | |
| Asp | Ser | Thr | Arg | Leu | Ile | Leu | Tyr | Asn | Asp | Gly | Asp | Ser | Leu | Gln | Tyr | | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | | |
| Ile | Glu | Arg | Asp | Gly | Thr | Glu | Ser | Tyr | Leu | Thr | Val | Ser | Ser | His | Pro | | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | | |
| Asn | Ser | Leu | Met | Lys | Lys | Ile | Thr | Leu | Leu | Lys | Tyr | Phe | Arg | Asn | Tyr | | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | | | |
| Met | Ser | Glu | His | Leu | Leu | Lys | Ala | Gly | Ala | Asn | Ile | Thr | Pro | Arg | Glu | | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | | |
| Gly | Asp | Glu | Leu | Ala | Arg | Leu | Pro | Tyr | Leu | Arg | Thr | Trp | Phe | Arg | Thr | | | |
| | | 180 | | | | | | 185 | | | | | 190 | | | | | |
| Arg | Ser | Ala | Ile | Ile | Leu | His | Leu | Ser | Asn | Gly | Ser | Val | Gln | Ile | Asn | | | |
| | | 195 | | | | | 200 | | | | | 205 | | | | | | |
| Phe | Phe | Gln | Asp | His | Thr | Lys | Leu | Ile | Leu | Cys | Pro | Leu | Met | Ala | Ala | | | |
| | 210 | | | | | 215 | | | | | 220 | | | | | | | |
| Val | Thr | Tyr | Ile | Asp | Glu | Lys | Arg | Asp | Phe | Arg | Thr | Tyr | Arg | Leu | Ser | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | | |

Leu Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu Arg
245 250 255

Tyr Ala Arg Thr Met Val Asp Lys Leu Leu Ser Ser Arg Ser Ala Ser
260 265 270

Asn Arg Leu Lys Ala Ser
275

<210> 78
<211> 282
<212> PRT
<213> *Xenopus laevis*

<400> 78

Ser Ile Ala Pro Ser Thr Ile Asp Gln Ser Leu Arg Lys Pro Leu Thr
1 5 10 15

Ala Ile Asn Lys Gly Gln Asp Ser Pro Leu Val Glu Lys Gln Val Ala
20 25 30

Pro Ala Lys Glu Glu Glu Met Gln Gln Pro Glu Phe Thr Glu Pro Ala
35 40 45

Asp Cys Tyr Leu Ser Glu Met Leu Gln Gln Leu Thr Cys Leu Asn Ala
50 55 60

Val Lys Pro Ser Glu Arg Ala Leu Ile Arg Gln Glu Glu Ala Glu Asp
65 70 75 80

Pro Ala Ser Ile Pro Ile Phe Trp Ile Ser Lys Trp Val Asp Tyr Ser
85 90 95

Asp Lys Tyr Gly Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val
100 105 110

Leu Phe Asn Asp Ser Thr Arg Leu Ile Met Tyr Asn Asp Gly Asp Ser
115 120 125

Leu Gln Tyr Ile Glu Arg Asn Asn Thr Glu Ser Tyr Leu Asn Val Arg
130 135 140

Ser Tyr Pro Thr Thr Leu Thr Lys Lys Ile Thr Leu Leu Lys Tyr Phe

| | | | | | | |
|-----------------------------------------------------------------|-------------------------------------------------|-----|-----|-----|-----|-----|
| 145 | | 150 | | 155 | | 160 |
| Arg Asn Tyr Met | Ser Glu His Leu Leu Lys Ala Gly Ala Asn Thr Thr | | | | | |
| | 165 | | 170 | | 175 | |
| Pro Arg Glu Gly Asp Glu Leu Ala Arg Leu Pro Phe Leu Arg Thr Trp | | | | | | |
| | 180 | | 185 | | 190 | |
| Phe Arg Thr Arg Ser Ala Ile Ile Leu His Leu Ser Asn Gly Thr Val | | | | | | |
| | 195 | | 200 | | 205 | |
| Gln Ile Asn Phe Phe Gln Asp His Thr Lys Ile Ile Leu Cys Pro Leu | | | | | | |
| | 210 | | 215 | | 220 | |
| Met Ala Ala Val Ser Tyr Ile Asp Glu Lys Arg Glu Phe Arg Thr Tyr | | | | | | |
| | 225 | | 230 | | 235 | 240 |
| Lys Leu Ser Leu Ile Gln Glu Phe Gly Cys Cys Lys Glu Leu Ala Ser | | | | | | |
| | 245 | | 250 | | 255 | |
| Arg Leu Arg Tyr Ala Arg Thr Met Val Glu Lys Leu Gln Ser Ser Lys | | | | | | |
| | 260 | | 265 | | 270 | |
| Ser Ala Val Ala His Val Lys Ala Ser Ala | | | | | | |
| | 275 | | 280 | | | |
| <210> 79 | | | | | | |
| <211> 279 | | | | | | |
| <212> PRT | | | | | | |
| <213> Drosophila melanogaster | | | | | | |
| <400> 79 | | | | | | |
| Gly Ser Asn Asp Thr Ile Glu Asp Ser Met His Arg Lys Pro Leu Met | | | | | | |
| 1 | 5 | | 10 | | 15 | |
| Glu Met Asn Gly Ile Arg Pro Asp Asp Thr Arg Leu Glu Ser Thr Phe | | | | | | |
| | 20 | | 25 | | 30 | |
| Leu Lys Ala Asn Leu His Asp Ala Ile Thr Ala Ser Ala Gln Val Cys | | | | | | |
| | 35 | | 40 | | 45 | |
| Arg His Ser Glu Asp Tyr Arg Ser Asp Ile Glu Ser Leu Tyr Gln Gln | | | | | | |
| | 50 | | 55 | | 60 | |

Leu Thr Asn Leu Ile Asn Gly Lys Pro Arg Ile Leu Gln Gly Asn Leu
65 70 75 80

Gly Asp Glu Asn Thr Asp Pro Ala Ala Gln Pro Leu Phe Trp Ile Ser
85 90 95

Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly Phe Gly Tyr Gln Leu Cys
100 105 110

Asp Glu Gly Ile Gly Val Met Phe Asn Asp Thr Thr Lys Leu Ile Leu
115 120 125

Leu Pro Asn Gln Ile Asn Val His Phe Ile Asp Lys Asp Gly Lys Glu
130 135 140

Thr Tyr Met Thr Thr Thr Asp Tyr Cys Lys Ser Leu Asp Lys Lys Met
145 150 155 160

Lys Leu Leu Ser Tyr Phe Lys Arg Tyr Met Ile Glu His Leu Val Lys
165 170 175

Ala Gly Ala Asn Asn Val Asn Ile Glu Ser Asp Gln Ile Ser Arg Met
180 185 190

Pro His Leu His Ser Trp Phe Arg Thr Thr Cys Ala Val Val Met His
195 200 205

Leu Thr Asn Gly Ser Val Gln Leu Asn Phe Ser Asp His Met Lys Leu
210 215 220

Ile Leu Cys Pro Arg Met Ser Ala Ile Thr Tyr Met Asp Gln Glu Lys
225 230 235 240

Asn Phe Arg Thr Tyr Arg Phe Ser Thr Ile Val Glu Asn Gly Val Ser
245 250 255

Lys Asp Leu Tyr Gln Lys Ile Arg Tyr Ala Gln Glu Lys Leu Arg Lys
260 265 270

Met Leu Glu Lys Met Phe Thr
275

<210> 80
 <211> 13
 <212> PRT
 <213> Homo sapiens

<400> 80

Ala Gln Leu Leu Cys Ser Thr Pro Asn Gly Leu Asp Arg
 1 5 10

<210> 81
 <211> 13
 <212> PRT
 <213> Xenopus laevis

<400> 81

Pro Arg Leu Leu Cys Ser Thr Pro Ser Phe Lys Lys Thr
 1 5 10

<210> 82
 <211> 197
 <212> PRT
 <213> Homo sapiens

<400> 82

Pro Ile Phe Trp Val Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
 1 5 10 15

Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val Leu Phe Asn Asp
 20 25 30

Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly Asp Ser Leu Gln Tyr Ile
 35 40 45

Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr Val Ser Ser His Pro Asn
 50 55 60

Ser Leu Met Lys Lys Ile Thr Leu Leu Lys Tyr Phe Arg Asn Tyr Met
 65 70 75 80

Ser Glu His Leu Leu Lys Ala Gly Ala Asn Ile Thr Pro Arg Glu Gly
 85 90 95

Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg Thr Trp Phe Arg Thr Arg
 100 105 110

Ser Ala Ile Ile Leu His Leu Ser Asn Gly Ser Val Gln Ile Asn Phe
115 120 125

Phe Gln Asp His Ile Lys Leu Ile Leu Cys Pro Leu Met Ala Ala Val
130 135 140

Thr Tyr Ile Asp Glu Lys Arg Asp Phe Arg Thr Tyr Arg Leu Ser Leu
145 150 155 160

Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu Arg Tyr
165 170 175

Ala Arg Thr Met Val Asp Lys Leu Leu Ser Ser Arg Ser Ala Ser Asn
180 185 190

Arg Leu Lys Ala Ser
195

<210> 83
<211> 197
<212> PRT
<213> Mus musculus

<400> 83

Pro Ile Phe Trp Val Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
1 5 10 15

Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val Leu Phe Asn Asp
20 25 30

Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly Asp Ser Leu Gln Tyr Ile
35 40 45

Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr Val Ser Ser His Pro Asn
50 55 60

Ser Leu Met Lys Lys Ile Thr Leu Leu Asn Tyr Phe Arg Asn Tyr Met
65 70 75 80

Ser Glu His Leu Leu Lys Ala Gly Ala Asn Ile Thr Pro Arg Glu Gly
85 90 95

Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg Thr Trp Phe Arg Thr Arg
100 105 110

Ser Ala Ile Ile Leu His Leu Ser Asn Gly Thr Val Gln Ile Asn Phe
115 120 125

Phe Gln Asp His Thr Lys Leu Ile Leu Cys Pro Leu Met Ala Ala Val
130 135 140

Thr Tyr Ile Asn Glu Lys Arg Asp Phe Gln Thr Tyr Arg Leu Ser Leu
145 150 155 160

Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu Arg Tyr
165 170 175

Ala Arg Thr Met Val Asp Lys Leu Leu Ser Ser Arg Ser Ala Ser Asn
180 185 190

Arg Leu Lys Ala Ser
195

<210> 84
<211> 197
<212> PRT
<213> Rattus norvegicus

<400> 84

Pro Ile Phe Trp Val Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
1 5 10 15

Leu Gly Tyr Asp Leu Cys Asp Asn Ser Val Gly Val Leu Phe Asn Asp
20 25 30

Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly Asp Ser Leu Gln Tyr Ile
35 40 45

Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr Val Ser Ser His Pro Asn
50 55 60

Ser Leu Met Lys Lys Ile Thr Leu Leu Asn Tyr Phe Arg Asn Tyr Met
65 70 75 80

Ser Glu His Leu Leu Lys Ala Gly Ala Asn Ile Thr Pro Arg Glu Gly
85 90 95

Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg Thr Trp Phe Arg Thr Arg
100 105 110

Ser Ala Ile Ile Leu His Leu Ser Asn Gly Thr Val Gln Ile Asn Phe
115 120 125

Phe Gln Asp His Thr Lys Leu Ile Arg Gly Pro Leu Met Ala Ala Val
130 135 140

Thr Tyr Ile Asn Glu Lys Arg Asp Phe Arg Thr Tyr Arg Leu Ser Leu
145 150 155 160

Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu Arg Tyr
165 170 175

Ala Arg Thr Met Val Asp Lys Leu Leu Ser Ser Arg Ser Ala Cys Asn
180 185 190

Arg Leu Lys Ala Ser
195

<210> 85
<211> 210
<212> PRT
<213> Caenorhabditis elegans

<400> 85

Pro Val Phe Trp Ile Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
1 5 10 15

Ile Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val Leu Phe Asn Asp
20 25 30

Asn Ser Arg Ile Met Leu Asp Gln Ala Gly Asn Glu Leu Thr Tyr Ile
35 40 45

Glu Lys Ser Asn Lys Glu His Tyr Phe Ser Met His Ser Gly Glu Met
50 55 60

Pro Gly Leu Leu Met Lys Lys Asn Thr Leu Leu Lys Tyr Phe Arg Ser
65 70 75 80

Tyr Met Asn Asp His Leu Val Lys Ala Gly Glu Gly Ser Glu Gln Arg
85 90 95

Ala Gly Asp Asp Leu Ala Arg Leu Pro Thr Leu Arg Val Trp Phe Arg
100 105 110

Thr Lys Ser Ala Ile Val Leu His Leu Ser Asn Gly Thr Val Gln Ile
115 120 125

Asn Phe Phe Asn Asp His Val Lys Met Met Met Cys Pro Leu Met Gln
130 135 140

Ala Val Thr Phe Ile Asp Gln Asn Lys Arg Met Leu Thr Tyr Lys Leu
145 150 155 160

Asn Asn Leu Gln Arg Asn Gly Cys Pro Glu Lys Phe Leu His Arg Leu
165 170 175

Lys Tyr Ala Lys Thr Met Ile Glu Arg Leu Met Asp Ser Ala Asn Val
180 185 190

Val Ser Gln Asn Pro Ala Arg Gln Pro Asp Met Pro Arg Ser Met Ala
195 200 205

Ala Ala
210

<210> 86
<211> 189
<212> PRT
<213> Drosophila melanogaster

<400> 86

Pro Leu Phe Trp Ile Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
1 5 10 15

Phe Gly Tyr Gln Leu Cys Asp Glu Gly Ile Gly Val Met Phe Asn Asp
20 25 30

Thr Thr Lys Leu Ile Leu Leu Pro Asn Gln Ile Asn Val His Phe Ile
35 40 45

Asp Lys Asp Gly Lys Glu Thr Tyr Met Thr Thr Thr Asp Tyr Cys Lys
50 55 60

Ser Leu Asp Lys Lys Met Lys Leu Leu Ser Tyr Phe Lys Arg Tyr Met
65 70 75 80

Ile Glu His Leu Val Lys Ala Gly Ala Asn Asn Val Asn Ile Glu Ser
85 90 95

Asp Gln Ile Ser Arg Met Pro His Leu His Ser Trp Phe Arg Thr Thr
100 105 110

Cys Ala Val Val Met His Leu Thr Asn Gly Ser Val Gln Leu Asn Phe
115 120 125

Ser Asp His Met Lys Leu Ile Leu Cys Pro Arg Met Ser Ala Ile Thr
130 135 140

Tyr Met Asp Gln Glu Lys Asn Phe Arg Thr Tyr Arg Phe Ser Thr Ile
145 150 155 160

Val Glu Asn Gly Val Ser Lys Asp Leu Tyr Gln Lys Ile Arg Tyr Ala
165 170 175

Gln Glu Lys Leu Arg Lys Met Leu Glu Lys Met Phe Thr
180 185

<210> 87
<211> 198
<212> PRT
<213> *Xenopus laevis*

<400> 87

Pro Ile Phe Trp Ile Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
1 5 10 15

Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val Leu Phe Asn Asp
20 25 30

Ser Thr Arg Leu Ile Met Tyr Asn Asp Gly Asp Ser Leu Gln Tyr Ile
35 40 45

Glu Arg Asn Asn Thr Glu Ser Tyr Leu Asn Val Arg Ser Tyr Pro Thr
50 55 60

Thr Leu Thr Lys Lys Ile Thr Leu Leu Lys Tyr Phe Arg Asn Tyr Met
65 70 75 80

Ser Glu His Leu Leu Lys Ala Gly Ala Asn Thr Thr Pro Arg Glu Gly
85 90 95

Asp Glu Leu Ala Arg Leu Pro Phe Leu Arg Thr Trp Phe Arg Thr Arg
100 105 110

Ser Ala Ile Ile Leu His Leu Ser Asn Gly Thr Val Gln Ile Asn Phe
115 120 125

Phe Gln Asp His Thr Lys Ile Ile Leu Cys Pro Leu Met Ala Ala Val
130 135 140

Ser Tyr Ile Asp Glu Lys Arg Glu Phe Arg Thr Tyr Lys Leu Ser Leu
145 150 155 160

Ile Gln Glu Phe Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu Arg Tyr
165 170 175

Ala Arg Thr Met Val Glu Lys Leu Gln Ser Ser Lys Ser Ala Val Ala
180 185 190

His Val Lys Ala Ser Ala
195

<210> 88
<211> 195
<212> PRT
<213> Helicobacter pylori

<400> 88

Pro Ile Leu Trp Val Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
1 5 10 15

Leu Gly Tyr Gln Leu Cys Asp Gly Ser Val Gly Val Leu Phe Asn Asp
20 25 30

Ser Thr Arg Leu Leu Leu His Ala Asn Ala Asp Thr Leu Glu Tyr Ile
35 40 45

Glu Arg Asp Gly Asn Glu Lys Tyr Cys Arg Leu Gly Ser Tyr Asp Ser
50 55 60

Thr Leu His Lys Lys Val Thr Leu Leu Lys Tyr Phe Arg Asn Tyr Met
65 70 75 80

Ser Glu His Leu Leu Lys Ala Gly Ala Ala Met Thr Pro Arg Glu Ser
85 90 95

Asp Ser Met Ala Arg Leu Pro Phe Leu Gln Ser Trp Phe Arg Thr Lys
100 105 110

Ser Ala Ile Val Leu His Leu Ser Asn Gly Thr Val Gln Ile Asn Phe
115 120 125

Phe Glu Asp His Thr Lys Leu Ile Val Cys Pro Met Met Gly Ala Ala
130 135 140

Thr Tyr Ile Asp Ala Lys Arg Asn Phe Arg Thr Phe Arg Leu Asn Leu
145 150 155 160

Ile Glu Lys His Gly Cys Thr Pro Asp Leu Tyr Asp Arg Ile Lys Tyr
165 170 175

Ala Asn Asn Met Val Lys Asn Met Leu Asp Lys Lys Thr Thr Thr Ala
180 185 190

Ala Ala His
195

<210> 89
<211> 186
<212> PRT
<213> Homo sapiens

<400> 89

Ser Phe Gln Trp Val Thr Lys Trp Val Asp Tyr Ser Asn Lys Tyr Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly Val Leu Phe Asn Asn
20 25 30

Gly Ala His Met Ser Leu Leu Pro Asp Lys Lys Thr Val His Tyr Tyr
35 40 45

Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala Thr Asp Ala Arg Glu
50 55 60

Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr Phe Ser His Tyr Met
65 70 75 80

Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro Ser Val Thr Asp Ile
85 90 95

Arg Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu Lys Ser Asp Lys Ala
100 105 110

Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln Val Asn Phe Tyr His
115 120 125

Asp His Thr Lys Ile Ile Ile Cys Ser Gln Asn Glu Glu Tyr Leu Leu
130 135 140

Thr Tyr Ile Asn Glu Asp Arg Ile Ser Thr Thr Phe Arg Leu Thr Thr
145 150 155 160

Leu Leu Met Ser Gly Cys Ser Ser Glu Leu Lys Asn Arg Met Glu Tyr
165 170 175

Ala Leu Asn Met Leu Leu Gln Arg Cys Asn
180 185

<210> 90
<211> 186
<212> PRT
<213> Mus musculus

<400> 90

Ser Phe Gln Trp Val Thr Lys Trp Val Asp Tyr Ser Asn Lys Tyr Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly Val Leu Phe Asn Asn
20 25 30

Gly Ala His Met Ser Leu Leu Pro Asp Lys Lys Thr Val His Tyr Tyr
35 40 45

Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala Thr Asp Ala Pro Glu
50 55 60

Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr Phe Ser His Tyr Met
65 70 75 80

Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro Ser Val Thr Asp Ile
85 90 95

Arg Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu Lys Ser Asp Lys Ala
100 105 110

Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln Val Asn Phe Tyr His
115 120 125

Asp His Thr Lys Ile Ile Ile Cys Asn Gln Ser Glu Glu Tyr Leu Leu
130 135 140

Thr Tyr Ile Asn Glu Asp Arg Ile Ser Thr Thr Phe Arg Leu Thr Thr
145 150 155 160

Leu Leu Met Ser Gly Cys Ser Leu Glu Leu Lys Asn Arg Met Glu Tyr
165 170 175

Ala Leu Asn Met Leu Leu Gln Arg Cys Asn
180 185

<210> 91
<211> 186
<212> PRT
<213> Rattus norvegicus

<400> 91

Ser Phe Gln Trp Val Thr Lys Trp Val Asp Tyr Ser Asn Lys Tyr Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly Val Leu Phe Asn Asn
20 25 30

Gly Ala His Met Ser Leu Leu Pro Asp Lys Lys Thr Val His Tyr Tyr
35 40 45

Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala Thr Asp Ala Pro Glu
50 55 60

Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr Phe Ser His Tyr Met
65 70 75 80

Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro Ser Val Thr Asp Ile
85 90 95

Arg Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu Lys Ser Asp Lys Ala
100 105 110

Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln Val Asn Phe Tyr His
115 120 125

Asp His Thr Lys Ile Ile Ile Cys Asn Gln Asn Glu Glu Tyr Leu Leu
130 135 140

Thr Tyr Ile Asn Glu Asp Arg Ile Ser Thr Thr Phe Arg Leu Thr Thr
145 150 155 160

Leu Leu Met Ser Gly Cys Ser Leu Glu Leu Lys His Arg Met Glu Tyr
165 170 175

Ala Leu Asn Met Leu Leu Gln Arg Cys Asn
180 185

<210> 92
<211> 214
<212> PRT
<213> Caenorhabditis elegans

<400> 92

Pro Ile Phe Trp Val Ser Gln Trp Val His Phe Pro Asn His Gly Ile
1 5 10 15

Gly Tyr Arg Leu Cys Glu Asn Ser Ser Gly Met Leu Phe Asn Asp Asn
20 25 30

Thr Gln Met Lys Val Asn Ser Ala Gly Asn Gln Leu Thr Phe Val Asp
35 40 45

Glu Asn Asn Thr Glu Gln Phe Tyr Thr Met Asn Asp Gln Val Pro Met
50 55 60

Asn Leu Gln Thr Lys Ile Asn Ile Phe Ser Asn Val Gln Ser Tyr Met
65 70 75 80

Asn Thr His Leu Glu Ala Asp Thr His Leu Glu Ala Glu Asp Gln Cys
85 90 95

Val Asn Lys Val Pro Pro Leu Arg Asn Phe Ala Arg Leu Pro Thr Ile
100 105 110

Gln Asn Trp Phe Glu Thr Lys Ser Ala Val Ile Phe His Leu Ser Asn
115 120 125

Gly Thr Val Gln Ile Asn Phe Leu Asp His Val Lys Met Val Leu Cys
130 135 140

Pro Leu Leu Lys Ser Val Thr Phe Ile Glu Glu Asn Lys Arg Val Ser
145 150 155 160

Thr Phe Thr Phe Ala Asn Ile Leu Thr Asn Ser Cys Pro Lys Lys Tyr
165 170 175

Leu Ser Arg Ile Glu Tyr Ala Gln Ala Lys Ile Lys Leu Leu Arg Pro
180 185 190

Thr Asn Asn Gln Glu His Val Val Tyr Val Asp Ser Pro Cys Arg Pro
195 200 205

Thr Thr Ser Asn Thr Ala
210

<210> 93
<211> 187
<212> PRT
<213> Xenopus laevis

<400> 93

Ser Phe His Trp Val Thr Lys Trp Val Asp Tyr Ser Asn Lys Tyr Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Asp His Thr Val Gly Val Leu Phe Asn Asn
20 25 30

Gly Ala His Met Ser Phe Leu Pro Asp Lys Lys Thr Val His Tyr Tyr
35 40 45

Ala Glu Leu Gly Gln Cys Ser Val Phe Pro Ala Thr Glu Ala Pro Glu
50 55 60

Gln Phe Ile Ser Gln Val Thr Val Leu Lys Tyr Phe Ser His Tyr Met
65 70 75 80

Glu Glu Asn Leu Met Asp Gly Gly Asp Leu Pro Ser Val Thr Asp Val
85 90 95

Cys Arg Pro Arg Leu Tyr Leu Leu Gln Trp Leu Lys Ser Asp Lys Ala
100 105 110

Leu Met Met Leu Phe Asn Asp Gly Thr Phe Gln Val Asn Phe Tyr His
115 120 125

Asp His Thr Lys Ile Ile Ile Ala Asn Gln Asn Asp Glu Tyr Val Leu
130 135 140

Thr Tyr Ile Asn Glu Asp Arg Met Ser Thr Thr Phe His Leu Ser Thr
145 150 155 160

Leu Leu Ile Ser Gly Cys Ser Pro Asp Leu Arg Gln Arg Leu Arg Tyr
165 170 175

Ala Leu Arg Leu Leu Arg Asp Arg Ser Pro Ala
180 185

<210> 94
<211> 187
<212> PRT
<213> Homo sapiens

<400> 94

Pro Leu Val Trp Phe Ser Glu Trp Val Gly Phe Ser Asn Lys Phe Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Ser Arg Arg Val Ala Val Leu Phe Asn Asp
20 25 30

Gly Thr His Met Ala Leu Ser Ala Asn Arg Lys Thr Val His Tyr Asn
35 40 45

Pro Thr Ser Thr Lys His Phe Ser Phe Ser Val Gly Ala Val Arg Arg
50 55 60

Ala Leu Gln Pro Gln Leu Gly Ile Leu Arg Tyr Phe Ala Ser Tyr Met
65 70 75 80

Glu Gln His Leu Met Lys Gly Gly Asp Leu Pro Ser Val Glu Glu Val
85 90 95

Glu Val Pro Ala Pro Pro Leu Leu Leu Gln Trp Val Lys Thr Asp Gln
100 105 110

Ala Leu Leu Met Leu Phe Ser Asp Gly Thr Val Gln Val Asn Phe Tyr
115 120 125

Gly Asp His Thr Lys Leu Ile Leu Ser Gly Trp Glu Pro Leu Leu Val
130 135 140

Thr Phe Val Ala Arg Asn Arg Ser Ala Cys Thr Tyr Leu Ala Ser His
145 150 155 160

Leu Arg Gln Leu Gly Cys Ser Pro Asp Leu Arg Gln Arg Leu Arg Tyr
165 170 175

Ala Leu Arg Leu Leu Arg Asp Arg Ser Pro Ala
180 185

<210> 95
<211> 187
<212> PRT
<213> Mus musculus

<400> 95

Pro Leu Val Trp Val Ser Lys Trp Val Asp Tyr Ser Asn Lys Phe Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Ser Arg Arg Val Ala Val Leu Phe Asn Asp
20 25 30

Gly Thr His Met Ala Leu Ser Ala Asn Arg Lys Thr Val His Tyr Asn
35 40 45

Pro Thr Ser Thr Lys His Phe Ser Phe Ser Met Gly Ser Val Pro Arg
50 55 60

Ala Leu Gln Pro Gln Leu Gly Ile Leu Arg Tyr Phe Ala Ser Tyr Met
65 70 75 80

Glu Gln His Leu Met Lys Gly Gly Asp Leu Pro Ser Val Glu Glu Ala
85 90 95

Glu Val Pro Ala Pro Pro Leu Leu Leu Gln Trp Val Lys Thr Asp Gln
100 105 110

Ala Leu Leu Met Leu Phe Ser Asp Gly Thr Val Gln Val Asn Phe Tyr
115 120 125

Gly Asp His Thr Lys Leu Ile Leu Ser Gly Trp Glu Pro Leu Leu Val
130 135 140

Thr Phe Val Ala Arg Asn Arg Ser Ala Cys Thr Tyr Leu Ala Ser His
145 150 155 160

Leu Arg Gln Leu Gly Cys Ser Pro Asp Leu Arg Gln Arg Leu Arg Tyr
165 170 175

Ala Leu Arg Leu Leu Arg Asp Gln Ser Pro Ala
180 185

<210> 96
<211> 186
<212> PRT
<213> Rattus norvegicus

<400> 96

Pro Leu Val Trp Val Ser Lys Trp Val Asp Tyr Ser Asn Lys Phe Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Ser Arg Arg Val Ala Val Leu Phe Asn Asp
20 25 30

Gly Thr His Met Ala Leu Ser Ala Asn Arg Lys Thr Val His Tyr Asn
35 40 45

Pro Thr Ser Thr Lys His Phe Ser Phe Ser Val Gly Ser Val Pro Arg
50 55 60

Ala Leu Arg Pro Gln Leu Gly Ile Leu Arg Tyr Phe Ala Ser Tyr Met
65 70 75 80

Glu Gln His Leu Met Lys Gly Gly Asp Leu Pro Ser Val Glu Glu Val
85 90 95

Glu Val Pro Ala Pro Pro Leu Leu Leu Gln Trp Val Lys Thr Asp Gln
100 105 110

Ala Leu Leu Met Leu Phe Ser Asp Gly Thr Val Gln Val Asn Phe Tyr
115 120 125

Gly Asp His Thr Lys Leu Ile Leu Ser Gly Trp Glu Pro Leu Leu Val
130 135 140

Thr Phe Val Ala Arg Asn Arg Ser Ala Cys Thr Tyr Leu Ala Ser His
145 150 155 160

Leu Arg Gln Leu Gly Cys Ser Pro Asp Leu Arg Gln Arg Leu Arg Tyr
165 170 175

Ala Leu Arg Leu Leu Arg Asp Gln Ser Pro
180 185

<210> 97
<211> 186
<212> PRT
<213> Xenopus laevis

<400> 97

His Phe Val Trp Val Ser Lys Trp Val Asp Tyr Ser Asn Lys Tyr Gly
1 5 10 15

Phe Gly Tyr Gln Leu Ser Asn Arg Ser Ile Gly Val Leu Phe Asn Ser
20 25 30

Gly Thr His Met Val Phe Pro Ala His Arg Arg His Val His Tyr Asn
35 40 45

Leu Thr Asn Ser Arg His Phe Val Pro Thr Ser Thr Val Pro Glu Gln
50 55 60

Leu Gln Gly Gln Met Ser Ile Leu Gln Tyr Phe Ala Thr Tyr Met Glu
65 70 75 80

Lys Asn Leu Met Lys Gly Gly Asp Leu Pro Cys His Glu Glu Gly Ser
85 90 95

Gln Ala Pro Leu Leu Leu Leu Gln Trp Val Lys Thr Glu His Ala Leu
100 105 110

Leu Met Leu Phe Ser Asn Gly Thr Leu Gln Val Asn Phe Tyr Asn Asp
115 120 125

His Thr Lys Ile Ile Leu Cys Lys Pro Gln Asp Ala Tyr Leu Leu Thr
130 135 140

Tyr Ile Asn Arg Asp Arg Asn Ser Gln Thr Phe Leu Leu Ser Thr Leu
145 150 155 160

Ala Gln Thr Gly Cys Asn Ser Glu Met Tyr His Arg Leu Lys Tyr Thr
165 170 175

Val Lys Leu Leu Gln Gln Lys Ala Glu Ser
180 185

<210> 98

<211> 194

<212> PRT

<213> Schizosaccharomyces pombe

<400> 98

Pro Val Leu Phe Ile Thr Lys Trp Val Asp Tyr Ser Asn Lys Tyr Gly
1 5 10 15

Leu Gly Tyr Gln Leu Ser Asp Glu Ser Val Gly Val His Phe Asn Asp
20 25 30

Asp Thr Ser Leu Leu Phe Ser Ala Asp Glu Glu Val Val Glu Tyr Ala
35 40 45

Leu His Pro Lys Asp Thr Glu Ile Lys Pro Tyr Ile Tyr Pro Ala Ser
50 55 60

Lys Val Pro Glu Ser Ile Arg Ser Lys Leu Gln Leu Leu Lys His Phe
65 70 75 80

Lys Ser Tyr Met Gly Gln Asn Leu Ser Lys Ala Val Gln Asp Glu Ser
85 90 95

Phe Glu Lys Pro Lys Asn Ser Thr Ser Asn Thr Met Leu Phe Met Gln
100 105 110

His Tyr Leu Arg Thr Arg Gln Ala Ile Met Phe Arg Leu Ser Asn Gly
115 120 125

Ile Phe Gln Phe Asn Glu Leu Asp His Arg Lys Val Val Ile Ser Ser
130 135 140

Thr Ala Arg Lys Ile Ile Val Leu Asp Lys Glu Arg Glu Arg Val Glu
145 150 155 160

Leu Pro Leu Gln Glu Ala Ser Ala Phe Ser Glu Asp Leu Arg Ser Arg
165 170 175

Leu Lys Tyr Ile Arg Glu Thr Leu Glu Ser Trp Ala Ser Lys Met Glu
180 185 190

Val Ser

<210> 99
<211> 196
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 99

His Pro Met Ile Val Thr Lys Trp Val Asp Tyr Ser Asn Lys His Gly
1 5 10 15

Phe Ser Tyr Gln Leu Ser Thr Glu Asp Ile Gly Val Leu Phe Asn Asn
20 25 30

Gly Thr Thr Val Leu Arg Leu Ala Asp Ala Glu Glu Phe Trp Tyr Ile
35 40 45

Ser Tyr Asp Asp Arg Glu Gly Trp Val Ala Ser His Tyr Leu Leu Ser
50 55 60

Glu Lys Pro Arg Glu Leu Ser Arg His Leu Glu Val Val Asp Phe Phe
65 70 75 80

Ala Lys Tyr Met Lys Ala Asn Leu Ser Arg Val Ser Thr Phe Gly Arg
85 90 95

Glu Glu Tyr His Lys Asp Asp Val Phe Leu Arg Arg Tyr Thr Arg Tyr
 100 105 110

Lys Pro Phe Val Met Phe Glu Leu Ser Asp Gly Thr Phe Gln Phe Asn
 115 120 125

Phe Lys Asp His His Lys Met Ala Ile Ser Asp Gly Gly Lys Leu Val
 130 135 140

Thr Tyr Ile Ser Pro Ser His Glu Ser Thr Thr Tyr Pro Leu Val Glu
 145 150 155 160

Val Leu Lys Tyr Gly Glu Ile Pro Gly Tyr Pro Glu Ser Asn Phe Arg
 165 170 175

Glu Lys Leu Thr Leu Ile Lys Glu Gly Leu Lys Gln Lys Ser Thr Ile
 180 185 190

Val Thr Val Asp
 195

<210> 100
 <211> 99
 <212> PRT
 <213> Homo sapiens

<400> 100

Pro Ile Phe Trp Val Ser Lys Trp Val Asp Tyr Ser Asp Lys Tyr Gly
 1 5 10 15

Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val Leu Phe Asn Asp
 20 25 30

Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly Asp Ser Leu Gln Tyr Ile
 35 40 45

Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr Val Ser Ser His Pro Asn
 50 55 60

Ser Leu Met Lys Lys Ile Thr Leu Leu Lys Tyr Phe Arg Asn Tyr Met
 65 70 75 80

Ser Glu His Leu Leu Lys Ala Gly Ala Asn Ile Thr Pro Arg Glu Gly
85 90 95

Asp Glu Leu

<210> 101
<211> 98
<212> PRT
<213> Homo sapiens

<400> 101

Ala Arg Leu Pro Tyr Leu Arg Thr Trp Phe Arg Thr Arg Ser Ala Ile
1 5 10 15

Ile Leu His Leu Ser Asn Gly Ser Val Gln Ile Asn Phe Phe Gln Asp
20 25 30

His Thr Lys Leu Ile Leu Cys Pro Leu Met Ala Ala Val Thr Tyr Ile
35 40 45

Asp Glu Lys Arg Asp Phe Arg Thr Tyr Arg Leu Ser Leu Leu Glu Glu
50 55 60

Tyr Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu Arg Tyr Ala Arg Thr
65 70 75 80

Met Val Asp Lys Leu Leu Ser Ser Arg Ser Ala Ser Asn Arg Leu Lys
85 90 95

Ala Ser

<210> 102
<211> 87
<212> PRT
<213> Mus musculus

<400> 102

Ser Ala Gln Leu Leu Lys Ser Val Phe Val Lys Asn Val Gly Trp Ala
1 5 10 15

Thr Gln Leu Thr Ser Gly Ala Val Trp Val Gln Phe Asn Asp Gly Ser
20 25 30

Gln Leu Val Val Gln Ala Gly Val Ser Ser Ile Ser Tyr Thr Ser Pro
 35 40 45

Asp Gly Gln Thr Thr Arg Tyr Gly Glu Asn Glu Lys Leu Pro Glu Tyr
 50 55 60

Ile Lys Gln Lys Leu Gln Cys Leu Ser Ser Ile Leu Leu Met Phe Ser
 65 70 75 80

Asn Pro Thr Pro Asn Phe Gln
 85

<210> 103
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<220>
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 <222> (1)..(1)
 <223> Xaa = Met, Tyr, His, Phe, Lys, Ile, or Leu

<220>
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 <222> (2)..(2)
 <223> Xaa = Ala, His, Met, Thr, Phe, or Gln

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa = Ser, Ala or Gly

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> Xaa = Phosphorylated Ser or phosphorylated Thr

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = Pro, Met or any amino acid except Cys

<400> 103

Xaa Xaa Xaa Xaa Xaa
 1 5

<210> 104
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<222> (1)..(1)
<223> Xaa = Pro or Phe

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Met, Phe, Pro, Leu, or Ile

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = Met, Tyr, His, Phe, Lys, or Leu

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Ala, His, Met, Thr, Phe, or Gln

<220>
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<222> (5)..(5)
<223> Xaa = Ser or Ala

<220>
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<222> (6)..(6)
<223> PHOSPHORYLATION

<220>
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<222> (7)..(7)
<223> Xaa = Pro or Met

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = Phe, Ile, Lys, Leu, or Val

<400> 104

Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa
1 5

<210> 105
<211> 8

<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<222> (1)..(1)
<223> Xaa = Pro, Phe, or Ile

<220>
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<222> (2)..(2)
<223> Xaa = Phe, Ile, Met, Leu, Pro, or Val

<220>
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<222> (3)..(3)
<223> Xaa = Gln, Met, His, Phe, Ile, or Thr

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Thr, His, or Gln

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<221> MOD_RES
<222> (6)..(6)
<223> PHOSPHORYLATION

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = Phe, Leu, Ile, Val, or Lys

<400> 105

Xaa Xaa Xaa Xaa Ser Thr Pro Xaa
1 5

<210> 106
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ile, Leu, Val, Phe, or Pro

<220>
 <221> MISC_FEATURE
 <222> (3)..(3)
 <223> Xaa = Met, Leu, Phe, Ala, or Ile

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> Xaa = Thr or His

<220>
 <221> MOD_RES
 <222> (6)..(6)
 <223> PHOSPHORYLATION

<220>
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 <222> (7)..(7)
 <223> Xaa = Pro, Asp, or Glu

<220>
 <221> MISC_FEATURE
 <222> (8)..(8)
 <223> Xaa = Lys, Val, or Phe

<400> 106

Pro Xaa Xaa Xaa Ser Thr Xaa Xaa
 1 5

<210> 107
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

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 <223> Xaa = Pro or Phe

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa =Phe, Ile, Leu, Met, or Pro

<220>
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 <222> (3)..(3)
 <223> Xaa = Phe, Leu, or Met

<220>
 <221> MISC_FEATURE

<222> (4)..(4)
<223> Xaa = Thr, His, or Gln

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<221> MOD_RES
<222> (6)..(6)
<223> PHOSPHORYLATION

<220>
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<222> (8)..(8)
<223> Xaa = Lys, Ile, Leu, or Val

<400> 107

Xaa Xaa Xaa Xaa Ser Thr Pro Xaa
1 5

<210> 108
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

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<222> (1)..(1)
<223> Xaa = Pro or Phe

<220>
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<222> (2)..(2)
<223> Xaa = Phe, Ile, Leu, Met, or Val

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = Ala, Met, Phe, Val, or Ile

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Thr, Ala, Gln, Met, or His

<220>
<221> MOD_RES
<222> (6)..(6)
<223> PHOSPHORYLATION

<220>
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<222> (8)..(8)
<223> Xaa = Leu, Ile, or any amino acid other than Cys

<400> 108

Xaa Xaa Xaa Xaa Ser Thr Pro Xaa
1 5

<210> 109

<211> 222

<212> PRT

<213> Homo sapiens

<400> 109

Ala Leu Ser Asp Met Leu Gln Gln Leu His Ser Val Asn Ala Ser Lys
1 5 10 15

Pro Ser Glu Arg Gly Leu Val Arg Gln Ala Glu Ala Glu Asp Pro Ala
20 25 30

Cys Ile Pro Ile Phe Trp Val Ser Lys Trp Val Asp Tyr Ser Asp Lys
35 40 45

Tyr Gly Leu Gly Tyr Gln Leu Cys Asp Asn Ser Val Gly Val Leu Phe
50 55 60

Asn Asn Ser Thr Arg Leu Ile Leu Tyr Asn Asp Gly Asp Ser Leu Gln
65 70 75 80

Tyr Ile Glu Arg Asp Gly Thr Glu Ser Tyr Leu Thr Val Ser Ser His
85 90 95

Pro Asn Ala Leu Met Lys Lys Ile Thr Leu Leu Lys Tyr Phe Arg Asn
100 105 110

Tyr Met Ser Glu His Leu Leu Lys Ala Gly Ala Asn Ile Thr Pro Arg
115 120 125

Glu Gly Asp Glu Leu Ala Arg Leu Pro Tyr Leu Arg Thr Trp Phe Arg
130 135 140

Thr Arg Ser Ala Ile Ile Leu His Leu Ser Asn Gly Ser Val Gln Ile
145 150 155 160

Asn Phe Phe Gln Asp His Thr Lys Leu Ile Leu Cys Pro Leu Met Ala
165 170 175

Ala Val Thr Tyr Ile Asp Glu Lys Arg Asp Phe Arg Thr Tyr Arg Leu
180 185 190

Ser Leu Leu Glu Glu Tyr Gly Cys Cys Lys Glu Leu Ala Ser Arg Leu
195 200 205

Arg Tyr Ala Arg Thr Met Val Asp Lys Leu Leu Ser Ser Ala
210 215 220

<210> 110
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<222> (1)..(1)
<223> Xaa =any amino acid except Cys

<220>
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<222> (3)..(3)
<223> Xaa = Gly, Asp, or Glu

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Leu, Ile, Met, or Val

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = Phosphorylated Ser or Phosphorylated Tyr

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = Phe, Leu, or Ile

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Ile, Phe, Leu, Val, or Tyr

<400> 110

Xaa Tyr Xaa Xaa Xaa Gln Xaa Xaa Pro Xaa
1 5 10

<210> 111

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic

<220>

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<222> (1)..(2)

<223> Xaa = any amino acid except Cys

<220>

<221> MISC_FEATURE

<222> (4)..(4)

<223> Xaa = Ile, Met, Val, or Leu

<220>

<221> MOD_RES

<222> (5)..(5)

<223> PHOSPHORYLATION

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> Xaa = Phe, Ile, Gln, or Tyr

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> Xaa = Val or Thr

<220>

<221> MISC_FEATURE

<222> (9)..(9)

<223> Xaa = any amino acid except Cys

<220>

<221> MISC_FEATURE

<222> (10)..(10)

<223> Xaa = Ile, Phe, Met, or Leu

<400> 111

Xaa Xaa Glu Xaa Ser Xaa Xaa Phe Xaa Xaa
1 5 10

<210> 112

<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<222> (3)..(3)
<223> Xaa = Asp or Glu

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Leu, Ile, or Met

<220>
<221> MOD_RES
<222> (5)..(5)
<223> PHOSPHORYLATION

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Gln, Ile, or Pro

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> Xaa = Phe, Ile, Val, Leu, or Tyr

<400> 112

Gly Tyr Xaa Xaa Ser Xaa Xaa Xaa Phe Tyr
1 5 10

<210> 113
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<222> (1)..(3)
<223> Xaa = any amino acid except Cys

<220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> Xaa = Ile, Leu, or Trp

<220>
 <221> MOD_RES
 <222> (5)..(5)
 <223> PHOSPHORYLATION

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> Xaa = Gln, Phe, or Ile

<220>
 <221> MISC_FEATURE
 <222> (8)..(8)
 <223> Xaa = Ile, Leu, or Val

<220>
 <221> MISC_FEATURE
 <222> (9)..(9)
 <223> Xaa = Phe, Tyr, or Pro

<400> 113

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Xaa | Xaa | Xaa | Xaa | Thr | Xaa | Tyr | Xaa | Xaa | Ala |
| 1 | | | | 5 | | | | | 10 |

<210> 114
 <211> 10
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic

<220>
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 <222> (1)..(1)
 <223> Xaa = any amino acid except Cys

<220>
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 <222> (2)..(2)
 <223> Xaa = Phe or Tyr

<220>
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 <222> (3)..(3)
 <223> Xaa = Asp or Glu

<220>

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<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Ile, Val, Leu, or Met

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = phosphorylated Ser or phosphorylated Thr

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> Xaa = Val, Thr, Ile, or Ser

<220>
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<223> Xaa = Phe or Tyr

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<223> Xaa = Val or Pro

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<222> (10)..(10)
<223> Xaa = Phe or Gly

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<400> 114

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Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa
1              5              10

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<210> 115
<211> 10
<212> PRT
<213> Artificial Sequence

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<220>
<223> Synthetic

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<220>
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<222> (1)..(1)
<223> Xaa = any amino acid except Cys

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<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Arg or Tyr

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<220>
<221> MISC_FEATURE
<222> (3)..(3)

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<223> Xaa = Glu or Asp

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = Val, Ile, or Met

<220>
<221> MOD_RES
<222> (5)..(5)
<223> PHOSPHORYLATION

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Phe, Tyr, Ile, or Gln

<220>
<221> MISC_FEATURE
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<223> Xaa = Thr or Val

<220>
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<222> (9)..(9)
<223> Xaa = any amino acid except Cys

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Phe, Met, or Tyr

<400> 115

Xaa Xaa Xaa Xaa Ser Xaa Xaa Phe Xaa Xaa
1          5          10

<210> 116
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic

<220>
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<223> Xaa = any amino acid except Cys

<220>
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<222> (4)..(4)
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<222> (5)..(5)
<223> PHOSPHORYLATION

<220>
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<222> (6)..(6)
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<222> (7)..(7)
<223> Xaa = Val or Ile

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<222> (8)..(8)
<223> Xaa = Phe or Tyr

<220>
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<223> Xaa = any amino acid except Cys

<400> 116

Xaa Xaa Tyr Xaa Ser Xaa Xaa Xaa Ile Xaa
1          5          10

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<223> Xaa = any amino acid except Cys

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<223> Xaa = Asp or Glu

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<222> (4)..(4)
<223> Xaa = Ile or Leu

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<222> (5)..(5)
<223> PHOSPHORYLATION

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<222> (6)..(6)
<223> Xaa = Gln, Glu, or Phe

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<222> (7)..(7)
<223> Xaa = Asp, Tyr, or Ile

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<222> (8)..(8)
<223> Xaa = Phe or Tyr

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<222> (9)..(9)
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Xaa Glu Xaa Xaa Thr Xaa Xaa Xaa Xaa Ala
1 5 10

<210> 118
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<222> (1)..(3)
<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is Ala, Ile, Leu, Met, Asn, Pro, Ser, Thr, or Val

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<223> Xaa is phosphorylated Ser or phosphorylated Thr

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<223> Xaa is a biased mixture of 25% E, 75% of any amino acid except

Arg, Cys, Lys, or His

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<222> (8)..(10)
<223> Xaa is any amino acid except Cys

<400> 118

Xaa Xaa Xaa Xaa Xaa Gln Xaa Xaa Xaa Xaa
1 5 10

<210> 119
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<223> Xaa = any amino acid

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<222> (2)..(2)
<223> Xaa = Cys, Phe, Trp, or Tyr

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<221> MISC_FEATURE
<222> (3)..(3)
<223> Xaa = Ile, Leu, or Val

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> Xaa = any amino acid with aliphatic or aromatic side chains

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<223> PHOSPHORYLATION

<220>
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<223> Xaa = Asp, Glu, Met, or Asn

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<222> (8)..(8)
<223> Xaa = Phe or Ile

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 <222> (9)..(9)
 <223> Xaa = Gly, His, Lys, or Pro

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 <222> (10)..(10)
 <223> Xaa = Phe, Lys, Trp, or Tyr

<400> 119

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| 1 | | | | 5 | | | | | 10 |

<210> 120
 <211> 10
 <212> PRT
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 <223> Xaa = any amino acid

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 <223> Xaa = Phe, Trp, or Tyr

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| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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 <223> Xaa = Phe, Ile, Leu, Asn, or Tyr

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 <222> (9)..(10)
 <223> Xaa = any amino acid

<400> 121

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| 1 | | | | 5 | | | | | 10 |

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Xaa Xaa Xaa Xaa Ser Xaa Xaa Xaa Xaa Xaa
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<400> 123

Gly Ala Ala Tyr Asp Ile Ser Gln Val Phe Pro Phe Ala Lys Lys Lys
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<210> 124
<211> 16
<212> PRT
<213> Artificial Sequence

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<400> 124

Gly Ala Ala Tyr Asp Ile Thr Gln Val Phe Pro Phe Ala Lys Lys Lys
1 5 10 15

<210> 125
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<213> Artificial Sequence

<220>
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1 5 10 15

<210> 126
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1 5 10 15

<210> 127
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Gly Ala Ala Tyr Asp Ile Ser Gln Val Phe Pro Phe Ala Lys Lys Lys
1 5 10 15

<210> 128
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1 5 10 15

<210> 129
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<212> PRT
<213> Artificial Sequence

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<400> 129

Gly Ala Ala Tyr Asp Ile Thr Gln Val Phe Pro Phe Ala Lys Lys Lys
1 5 10 15